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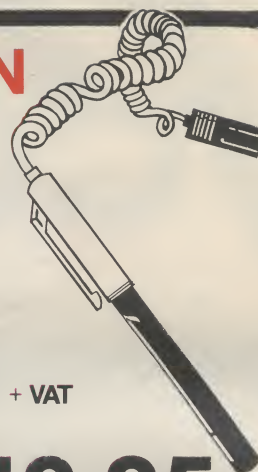
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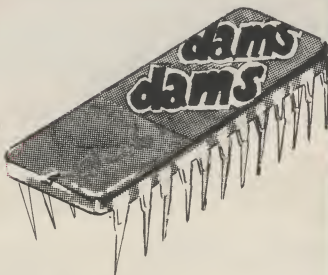
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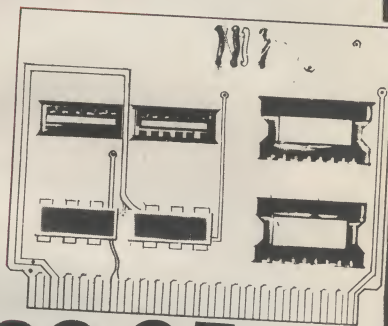
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Contents

Eye on Commodore 3

Is the Vic dead? Are we all to be abandoned? Just what is going on at Commodore Towers? Guest columnist Henry Deckhand peeks under the Commodore's skirts and mixes deduction with inside knowledge (and a **soupcou**n of guesswork)

News 4

A good mix this month — Arfon has disappeared, but there **are** alternatives: computer parties arrive: how to use a Sinclair printer on the Vic . . . and more

Competition 9

Win a 64 — the easy way! Anyone can win. Just use your skill, imagination, vision, dexterity etc (and no program-writing whatever) to acquire for yourself the Commodore's goodlooking new baby. First of a regular competition page with lots of goodies to win over the next 12 months.

Todd's Lore 11

Vicphile Mike Todd gets a nice pic of himself on his page from this issue on. If that's not enough to make you read it, how about the promise of one of the fullest expositions of using the Vic cassette that you'll ever see?

In Business 13

With the Commodore slashing his prices for disk drives and more and more useful-looking business software appearing, this section is becoming established as a pointer towards the lowest-cost business computer in the land.

Beginners Please 16

Follow the intrepid explorer in Vicland as J D Collins does battle with recalcitrant hardware, duff user instructions, poor salesmen, and bad games. Bloody but unbowed (and still a Vic enthusiast — we think!) he continues to Go Gladly Into That Good Night . . .

Under Review: the Commodore 64 20

We have had our hands on one of the first 64s to come into the country — so new in fact that it hadn't even been adapted for British colour TVs. We also got our hands on Steve Beats, who has used a 64 for some weeks now and probably knows as much about it as anyone in the UK. His verdict? It's a winner.

Butterfield on RS232 23

Part Two of the quick introduction to using the Vic as a communicating device using the RS232 standard. There's a built-in RS232 connection: this article shows you how to build your own adapter for it.

Victuals 25

Readers' programs for the Vic, back by popular demand. After last month's slight aberration on our part in demanding use of the Super Expander, this collection will all run on the **unexpanded** Vic.

The Compleat Software Catalogue — Part One 35

Start of a two-part round-up of all the Vic software we could locate in the UK for home, business, education and programming as well as games. The Catalogue gives supplier's address, prices, and description; and it also includes our own comments for software we know.

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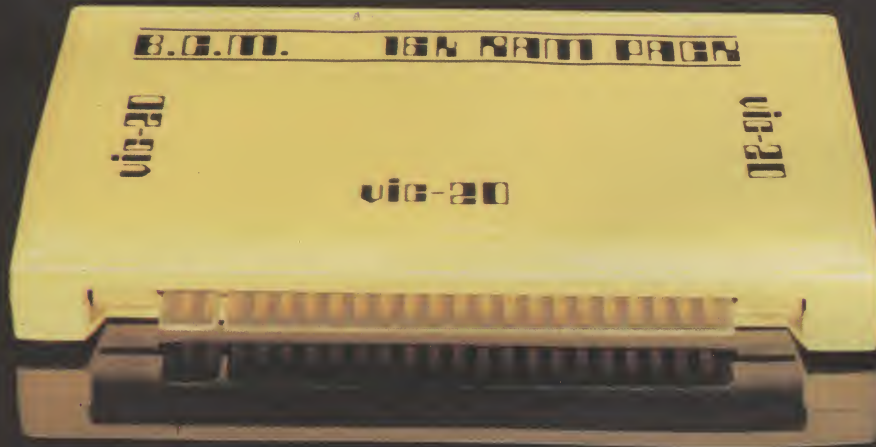
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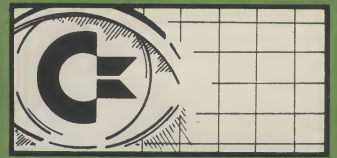
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Eye on Commodore: Whither Vic?

by Henry Deckhand



There's a slightly uneasy air about much of the correspondence we've been getting in the **Vic Computing** office recently. Just what is going on in Vicland? Will we all be left in the lurch as home computer prices tumble, cleverer computers are created by competitors, and Commodore itself decides to junk the Vic in favour of newer and more profitable products? Are we being forsaken?

Let's take a look at what's happening. For a start, the price of a Vic has fallen from £199 to £169. Commodore announced the price cut early in September, saying it lopped off the £30 "in line with recent trends in the United States market" — where there's a good deal of tit-for-tat rivalry getting under way in the pre-Christmas period between the home computer companies.

Atari, Texas Instruments and Tandy have all announced repricings and extra freebies.

As far as Britain is concerned, the competition is not conducted at quite the same level of infighting — the overall market just isn't so big. But the arrival here of the £125 Sinclair Spectrum and the £199 Dragon must have had some effect. The Atari 400 has dropped from £345 to around £250 since the start of the year; the TI 99/4A has also undergone a dramatic price cut, from £325 to £199.

Meanwhile the official line is that Sinclair's Spectrum isn't a concern: that price cut "gives Commodore a tremendous advantage over competitors, whose machines are priced at around £200". There would probably be a tad more truth in the statement if that comma had been omitted. As it is the only real drawback to the Spectrum as a competitor for Vic are its keyboard (better than ZX81, but still pretty unpleasant compared with the Vic's) and the seemingly inescapable problems Sinclair continues to have over shipment delays and component difficulties.

In our view, the repricing will help Vic to compete with the other home computers — and even with the Spectrum, despite its more limited display and the smaller built-in memory.

There's another factor that encouraged Commodore's price cut. The company has done pretty well at keeping Vic sales at the Recommended Retail Price. But of late some Vic dealers have been breaking ranks and selling at a

discount — down below £180 in some cases. They've been risking the wrath of Commodore by taking a smaller profit per Vic and hoping to get sell more computers.

In our view, Commodore recognises that it can't hold the RRP at too high a level in the face of the competition.

So Commodore needs the price reduction just to keep up sales of the Vic. But the cut might look like bad news for those of us who paid the £199 price: Lord knows I could use £30 right now. And to some it might also smack of desperation — Commodore desperately trying to protect its market and get rid of all those stockpiled Vics by slashing prices to the bone.

Commodore, on the other hand, points to big investments in software (28 new programs announced during September and October alone, with more to come) and in marketing — "a major advertising campaign designed to boost consumer sales of the Vic-20 in the run-up to the Christmas peak sales period".

That sounds like a continued presence for the Vic, at least for now. But what about the arrival of the new Commodore products?

The Commodore 64 gets an enthusiastic reception from us elsewhere in this issue, though at £299 the price looks a little on the high side even so. It should be available about now, with volume supplies getting through to the dealers before Christmas.

The Max (nee Ultimax and subsequently called Vickie and Vic-10 before Commodore finally settled on a name) will also be around in small numbers for the Christmas trade — Commodore won't be making many of them until next Spring. The recommended price for this games-orientated machine will be £110, though most retailers will probably sell the Max for £99.95 anyway (they still make 20 or 25 per cent gross profit on it at that price).

Next Spring there'll probably be something called the Vic-30 too, a 16KB Vic with a 40-column display — a 16K version of the 64, in fact, priced midway between the Vic-20 and the 64. More of that later.

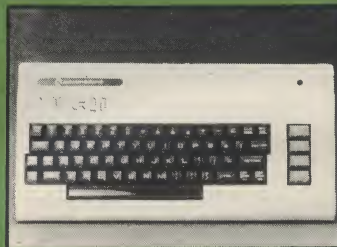
So where does the Vic-20 come in? Well, the prices of home computers aren't determined on a 'cost-plus-basis. Lots of people don't realise that. They think the Commodore sits down to tot up what a Vic or a 64 or Pet costs to

build, then adds on a bit for profit and writes the total on the price ticket.

Not so.

The prices of home computers are based on what the market will bear. In other words, Commodore and Atari and Texas and the other computer firms make a guesstimate of what you and I can afford to pay; then they take a sneaky look at what each other is charging and adjust their prices accordingly. Effectively they can ignore what it costs them to build the things in the first place.

It actually costs about £45 to make a Vic. Commodore's manufacturing costs are reckoned to be among the lowest in the industry, just because it has its very own semiconductor operation in MOS Technology, but the TI 99/4A and the Atari 800 and the Spectrum and all the rest aren't much more expensive to make.



The official description now reads: "The Commodore Vic-20 colour computer — £169.99 (inc. VAT)"

The difference between the £45 and the £199 we paid is basically commercial leeway. It can be spent on R&D for new products, it can be spent on packaging or marketing or developing add-on extras, it can be taken as profit, it can be given to the dealers and middlemen as their mark-up (which for home computers will typically be between 25 and 35 per cent of the selling price anyhow), it can be used to improve the product's competitive position by trimming the price...

Obviously Commodore does all of these to some extent. But the fact that Vics cost so little and the punters are prepared to pay so much gives Commodore many options as to how it balances the alternatives. That's what being in business is all about, really; and that's why Commodore is in business so successfully.

Our reading of the price cut on the Vic and the pricing of the new products is that they are designed

not only to keep the competition at bay but also to prevent them competing with each other. As a speculation that makes quite good sense, next April could well see the Max at £100, the Vic-20 at say £150 (don't forget that Commodore still has some leeway to make further cuts in the price if it wants to), the Vic-30 at around £210, and the 64 selling at about £275.

This has enough difference between the prices to prevent them competing with each other; and more important it has the Vic-20 sensibly filling a gap in the range of prices. That implies a continued role for the Vic.

In any case, Commodore can't drop the Vic altogether. It's definitely the worldwide market leader in the £150-£200 price range: Commodore says it's sold 55,000 of them in Britain alone, mainland Europe (especially Holland) is reported to be taking lots of Vics too, and over in the States they're doing pretty well in the face of intense competition from Atari.

It's true that Commodore is not in business to make friends, and altruism isn't the company's most impressive attribute. Commodore is pre-eminently in business to make money: it has just announced its year-end figures, and they are amazing — sales totalled \$228 million, about 70 per cent up on last year's revenues, and profits increased at nearly the same rate to top \$40 million. Now that's not a bad return at all, and it's pretty powerful evidence for Commodore's overriding commercial interests.

For simple commercial reasons Commodore will not ignore those 55,000 Vic users — plus the 10,000 to 20,000 who we may assume Commodore intends to add to their numbers by intensive sales promotion being done in the next couple of months.

Those Vic owners can represent a lot of additional money for Commodore if we can all be persuaded to buy memory expansion, Super Expanders and Programmer's Aids, RS232 and IEEE interfaces, modems and disk drives and printers and joysticks, plus a few of the many home, business and games programs that are starting to appear in the Commodore catalogue.

Keeping us going will mean yet more revenue for Commodore. And it's easy to sell to us: Commodore knows we're all prejudiced to

take an interest in Vic matters, we don't have to be convinced that one computer is so much better than another or that spending money on a Vic is better than spending it on something else.

I don't think Commodore will stop supporting us. There are too many Vic owners now.

What's more, we're an Upgrade Market. One day Commodore will look at this bunch of 60,000 to 80,000 eager and easily-identified and already-convinced Victims and think how much more money it can make if it sells us *another* computer. Of course, the replacement has to be something that doesn't cost too much — because we've already invested in Vics. And it has to be something that will run most of our accumulated Vic goodies — including the peripherals we've bought and the programs we have written. And it has to be something that will keep us in the mainstream of development — in other words, it too has to be upgradable.

Our Source at Commodore Towers say the marketing people here are pushing strongly for a Vic-30. Though we understand no decisions have yet been taken, this 16K version of a Commodore 64 could well be the way of improving the lot of the Vic-20 user: the proposal being considered is that from next April or thereabouts Vic-20 owners would be invited to send back their machine and a cheque (for £100? Or £150? We've no idea) in order to receive a replacement.

Like the 64, the Vic-30 would run all Vic-20 programs with little or no modification (maybe some screen memory POKEs would need changing). All Vic-20 peripherals — cassette, disk, printer, joysticks — would transfer too. What couldn't plug straight into the 30 would be any Vic-20 cartridge, because the expansion slot is physically different; but I'll eat my hat (my new marzipan trilby) if one of the more enterprising independents doesn't announce a low-cost converter board that will allow you to use Vic-20 cartridges.

So this is the Vic scene as seen from below decks: a continued existence for the Vic-20 until next Spring at least, maybe even until the end of 1983, with a couple more price reductions during the year: continued support in terms of Vic products from Commodore and the independents over a rather longer period: and from the Spring the opportunity to upgrade at a fairly reasonable cost to a Vic-30.

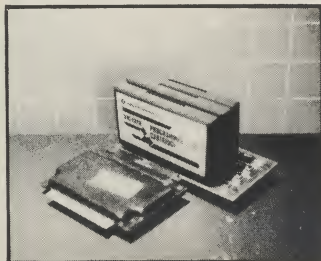
Watch this space...

Exit Arfon

Arfon Electronics, Wales' best known contribution to the Vic world, has ceased trading. No-one seems prepared to say why: but it seems that the Welsh Development Agency, which was largely responsible for the company getting off the ground in the principality in the first place, wasn't prepared to commit any more funds when Arfon's founder Kerr Borland asked for some extra schekels.

But this may not be the end of Arfon or its products — especially the Arfon expansion chassis, which is generally well liked (see our review earlier this year). We hear that at least one offer has been made for Arfon's facilities and/or its stock.

The departure of Arfon and the presumed demise of its generally well regarded expansion chassis



Stack has the other expansion module that is available immediately. Here it is with three of the four slots occupied by cartridges; note the 3K memory pack that's needed before it will fit into the Vic.

Party time

Push aside the Tupperware and ask the Avon lady to call some other day: it's Computer Party time!

No, that's not an occasion on which your Vic can have all the neighbourhood Ataris and ZX81s around for jelly, balloons and a quick PEEK in the broom cupboard. It's one of the ideas that keep spraying out from Adda Computers: someone comes along to your place and shows you all the wonders of a Vic in the comfort and privacy of your own abode — no more trekking through the drizzle and slush to an overcrowded understaffed back-street shop.

Adda is setting up agencies all over the country. The agent holds a complete demo kit of basic hardware and software (Max and the Commodore 64 too when they're available); you call the agent, he drops in and puts the machine through its paces. He can offer you some package deals, and he can also sell Vics on credit terms. If you

leaves the field open for anyone who can sell a plug-in method of running several cartridges at once in the form of chips.

We know of only two sources. The one we've been using with enthusiasm is Stack's Switchboard — space for four cartridges, each of which can be switched on or off without you having to remove the cartridge. So you can have a Super Expander and a Programmer's Aid and a cartridge game and one of Commodore's memory expansion packs all ready and waiting at the same time, for use in whatever combination you need.

It works well, and we had no problems at all in using the thing... apart from one of the switches breaking off during our first tests. We'd put that down to our man's hamfistedness, but bear in mind that the connections are pretty lightweight: we've been a lot more circumspect since.

There is one drawback to the Stack unit in that it can't fit directly on to the edge connector at the back of the Vic, a curious design trait that necessitates the use of another Stack gismo — a 3K memory cartridge which has a socket on to which you can plug the Switchboard.

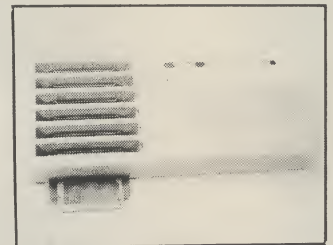
The 3K memory is reasonably priced at £26, so we've no complaints there. But you might want to be able to run programs irrespective of whether they assume expanded memory. Stack's 3K cartridge doesn't have a switch on it, so you can't change the Vic at will from being an expanded-memory

system back to a basic 3.5K system — unless you unplug the whole lot.

That apart we're happy to recommend the Stack 4-Slot Motherboard. It costs £24.99 Stack sells through most of the Vic dealers, or you can try 051-933 5511 direct.

Commodore's own effort in the expansion stakes is altogether a fancier piece of work. It hails from Commodore Germany, is called the Vic-1010, and is an impressive packaged box with six slots for cartridges. Commodore originally announced this at the same time as the Vic's launch; but clearly it was both more expensive and less versatile than the Arfon alternative, so it was quietly dropped.

Now it's back. The firm apparently has a thousand or so ready and waiting in the attics of Commodore Towers, and the target price is a much more reasonable £100. The obvious problem is that the cartridge slots aren't switched, but then not everyone wants that.



Elegantly styled but formerly no competition for Arfon, Commodore's 1010 expansion box is back in contention. We hear the (revised) price will be around £100.

order delivery will be within ten days ("usually").

Subsequently the agent can keep his (or her) customers in touch with latest developments — ie he can try to sell you new products as they appear. Could be quite a good way of fixing oneself up with a local contact for Vic problems and the like.

If you haven't bought a Vic yet, or if you'd like someone to come around and extoll the virtues of the 64, contact Adda on 01-992 9904 to get hold of your local agent.

Cheap print

A modest £19.95 buys you a 512-byte driver routine and cable to link Vic-20s to the cheap (£60) Sinclair ZX81 printer. Written by Softex Computers of Bournemouth, the interface can be used with normal PRINT/LIST syntax by Pet or Vic owners, with

the full high resolution graphics character set.

The printer also gives you the full ASCII alphanumeric character set (including lower case) and a 50 characters per second print speed; its width is 32 characters, which could be interesting. Paper costs around £2.50 a roll — you do need special coated paper.

Designer Adrian Millet's next project might well be even more interesting — interfacing the Spectrum's 100KB Microdrive floppy disk unit (when it appears). We reported recently that there was little hope of this happening soon — he's convinced however that there's a distinct possibility the technical problems can be overcome quite simply.

We've heard of another company doing interfaces for the Sinclair printer — Image Engineering, PO Box 22, Ayr KA7 2RZ — but they haven't responded to our request for information. Image's price is £4.50 for a 'how to do it' booklet: you build the interface yourself.

Adda cartridge or two

Our report on the Commodore Show back in June homed in on a collection of Scandinavian cartridges for the Vic that impressed us. We said that a UK distributorship deal was in the offing: and that has come to pass. Adda — which incidentally claims to be “Commodore’s number one dealer in Britain” — will henceforth be selling them.

Two of the cartridges are for educational or business use — VicStat and VicGraf: VicForth provides programmers with a compiler for the Forth language: and VicRel — a control device — will appeal to anyone who wants to control home or laboratory equipment.

VicStat offers statistical calculations and displays using single commands (for mean values, standard deviations and variances among other functions). There’s also linear correlation, MinMax (which finds high and low values), sort — usable on both numeric and alphanumeric data — and ‘group’ (which picks out groups of sorted strings).

Other single-word commands allow you to draw vertical and horizontal bar charts, to plot graphs, and to specify scales and the colours used by these commands. All or part of screen displays can be copied to the Vic printer.

We’ve seen VicStat and it does produce excellent graphics with quite powerful calculation functions.

Vic Graf uses the function keys to plot a graph automatically, define new functions, calculate accurate values of an intersection, and find the maxima and minima of a function. Simple editing allows you to check current functions and to change them.

One clever point is that VicGraf always tries to fill out the display, dimensioning the axes to the graph rather than the other way around — that’s an advantage over programs using a fixed origin.

VicRel is a control relay that plugs straight into the Vic user port to give programmable switching of any kind of electrical apparatus. It has six relay outputs that in theory can control door locks, lamps, valves, tools, ventilators, and more. There are also two inputs which could allow the Vic to read signals from external sources such as thermostats, push buttons or light-activated switches.

One command activates any combination of outputs. Each relay is capable of a maximum load of

24v at 10W, but then standard power relays can be used with VicRel to operate mains voltage apparatus. The two VicRel inputs simply require a 5-12 volts DC input — and VicRel includes a 5 volt +/- output for convenience.

These three cartridges retail for £28.95 (inc VAT). VicForth is £38.95, but then it’s a somewhat different level of complexity — the cartridge provides both an operating system and program development aid. The cartridge also comes with 3K of additional memory, which, because of the compact nature of Forth programs, is a lot of room.

VicForth is based on fig-Forth and is almost identical to Pet Forth. It does support Vic cassette deck — an unusual feature — but you’re more likely to use a Vic Disk unit and for that a System Extension Diskette is available from Adda.

Forth is an interesting language, based as it is on the idea that the user can develop his or her own commands from the 100 or so basic commands provided. Forth is supposed to combine the ease of high-level programming with the economical use of memory and the speed of execution you’d associate with assembler. Well worth trying.

All these products should be available from your local VIC 20 dealer or direct from Adda Computers on 01-997 6666.

Chess champ

Audiogenic describes Boss as “the definitive chess game for the Vic”.

It seems the people who wrote the package, a Dutch software house called Kavan Software, recently organised a contest between Boss and its main competitors on a range of microcomputers, each package being used on the micro for which it was designed and each playing the others.

Since the various levels of skill on each chess game are different, it was decided that each system would be set with a response time of 60 seconds.

The contenders were: Sargon II on an Apple, Petchess on an 8032, Chessmaster on a Texas TI 99/4A, and Boss on the Vic. Here are the results:

Sargon I	1.5 vs 0.5 Petchess
Boss	2.0 vs 0.0 Chessmaster
Sargon II	2.0 vs 0.0 Chessmaster
Boss	2.0 vs 0.0 Petchess

Petchess	2.0 vs 0.0 Chessmaster
Boss	2.0 vs 0.0 Sargon II

That gave the following somewhat surprising results:

Boss	6 points
Sargon II	3.5 points
Petchess	2.5 points
Chessmaster	0.0 points

Audiogenic is naturally pretty chirpy about the results, particularly as Sargon is so widely regarded as the bees knees when it comes to micro-based chess packages.

Boss comes as a cassette and requires a minimum of 8K expansion. Ten levels of play give response times of from one second to nine hours, depending on the state of the game: Boss also indicates how many moves ahead it is thinking and the number of moves to mate. It is capable of castling, queening and ‘en passant’ and operates on standard chess nomenclature. “A wide range of opening moves, greater intelligence and superior graphics combine to make Boss more than a match for the average player” — says Audiogenic.

Boss is available from Vic dealers or direct from Audiogenic (0734 595647) at £14.99 inclusive of post, packing and VAT.

The latest batch of goodies from Audiogenic includes a plug-in ‘programmer’s aid’ board and a good-looking machine code assembler.

BUTI (pronounced Beauty), retails at £39.99 and includes a 3K Memory Expansion for the money. The extra functions you get are much the same as on the Stack VICKIT chip and Commodore Programmer’s Aid cartridge — with some significant additions as well as the 3K memory.

The commands include AUTO, DELETE, DUMP, EDIT, FIND, HELP KILL, OFF, RENUMBER, STEP, and TRACE. But you also get UNNEW, a Hex-to-decimal (vice versa) counter, and a very handy ‘configuration’ command that formats an 8K Vic to imitate a 3.5K Vic and thus allows you to run all those unexpanded programs.

Audiogenic has also signed an agreement with Supersoft for the distribution of Mikro Assembler, “an advanced yet easy to use package which enables even novices to produce complex machine code programs”. Sounds great so far, doesn’t it? Again it’s a cartridge including an extra 3K RAM to allow you to write programs of a decent length.

It gives you a Machine Code Monitor, of course



Blunder: Some copies of the August issue contained an error in the Business section. The price of L&J’s cassettes Address Book and Stock Control cassettes is in fact £28.75.

Memory mapping: Our correspondent Mike Todd is also the King Vicman of the Independent Commodore Products Users Group. The July 1982 issue of the IC PUG newsletter contains (among other goodies) what looks like the start of a really useful series of Vic memory maps from Mike. It covers RAM locations 000 hex to FFFF hex — including the different RAM usage for the basic Vic, for Vics with 3K expansion, and for systems with more than that.

Boom boom: According to US market research firm International Resource Development, by 1992 fully 35 per cent of American homes will have “some kind of videogame” — with the “traditional Atari-type unit” increasingly being passed over in favour of “games-capable computers” like Vic. IRD reckons nearly \$4 billion worth of home computers will be shipped in 1992; but coin-operated arcade games will pull in double that.

Molecular: Apropos of nothing, here’s a plug for the Molecule Club — a ‘science education theatre’ for kids that is run as a spin-off from the Mermaid Theatre Company in London. Molecule aims to introduce children palatably (and cunningly) to basic science; past shows have covered topics like magnetism, electricity and sound. The current show is ‘Countdown’, an adventure play about computers and information technology. It opened in London last month and will be touring around the country before Christmas — get details from 01-236 9521.

Fast Vic: Greg Yob (nice bloke, wonderful name) writes about Commodore things in the States. A recent piece of his included a simple timed benchmark (FOR J = 1 TO 30000: X = X + 1: NEXT) that he tried on a Pet 4032, a Pet 8032 and a Vic. The result? Vic beat the Pets — 119.95 seconds against 134.07 for the 8032 and 131.77 for the 4023.

Better book: Another of his columns suggests a good way to get on top of Vic Basic is to buy some Pet manuals and books, ignore completely all references therein to Basic 4.0 and disks, and ingest the rest. He nominates the Pet/CBM Personal Computer Guide by Osborne and Donahue; we bought our copy a while ago from Mine of Information for £11.50.

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It will print programs, letters, business data, graphic displays and so on.

Its main features include: 80 characters per line • Tractor feed dot matrix • 30 characters per second print speed • Full alphanumerics and graphic printing • Double-size character capability • All cables and leads.

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The VIC single-drive Disk Unit provides a fast, accurate and efficient means of storing and retrieving data and programs.

Together with the Printer, it transforms the VIC 20 into the ideal system for the small businessman or serious computer programmer.

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Direct compatibility with Printer Intelligent system independent of VIC.

(VIC RAM not required to run it).

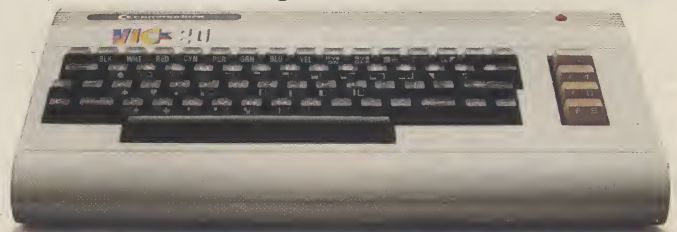


EXPANSION MEMORY CARTRIDGES

Special plug-in cartridges are available to expand VIC's memory. 3K, 8K and 16K RAM packs plug directly into the computer.

A Memory Expansion Board is also available to develop VIC's capabilities to the maximum.

For full details of VIC 20, its peripherals and software, and a list of your local dealers, contact: The Commodore Information Centre, 675 Ajax Avenue, Slough, Berkshire, SL14BG. Tel: Slough 79292.



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INFORMATION
TECHNOLOGY 82

More symbols

Browsing around the keyboard we've found a few symbols and functions that don't seem to be documented anywhere. Reader Andrew Casson has added a few more.

There are at least four special graphic symbols which are not inscribed on the Vic keyboard. These are listed in the character POKE chart on page 141 of the owner's manual, but are not in the CHR\$ chart.

They can be accessed only when in upper/lower case mode (which you get by pressing the Commodore and SHIFT keys simultaneously).

As well as typing the appropriate

key you obviously can POKE their value or PRINT a CHR\$ code.

Andrew's four display characters are quite useful:

- reversed N... switch to lower case
- reversed backslash (shifted N) ... switch to upper case
- reversed H... disable Commodore-plus-shift switching
- reversed I... enable switch

Unfortunately these characters cannot be produced by pressing a single key while in quote mode; and

since there is no 'escape' key, the following sequence of keystrokes must be used:

```
quotes
quotes
delete
RVS on
the control character
RVS off
quotes
delete
```

...geddit? That will leave you in quote mode.

Andrew points out that it is also advisable to use these new characters before any other control characters wherever possible "as their action may otherwise be inhibited".

Symbol	Keytop	Access by	POKE Value	CHR\$ Value
✓	@	SHIFT @	122	186 or 250
▨	*	COMM *	95	127 or 223
£	£	SHIFT £	105	169 or 233
†	†	SHIFT †	94	126 or 222

Stack cuts

Liverpool's Stack Computer Services has just announced two upgraded products in its range of peripherals for the Vic-20. The first is the 'light pen plus', now adopted by Commodore and available at the original price of £25 plus VAT. A range of games software has been released for the light pen from local Vic dealers.

The other product to be updated is Stack's Storeboard expansion memory unit. It now comes fitted with a basic 8K of memory for £49 plus VAT. The Storeboard fits neatly on to the back of the Vic and

will enable expansions up to 32K to be made; RAM packs £21 per 8K upgrade, which means total expansion to 32K is possible for £97 plus VAT.

There's more good news: Stack says it will fit the impressive Vickit II programmers' aid ROM chip with built-in graphics command to any 3K Commodore cartridge for £29, which is only the price of the ROM itself. You send them your cartridge, they put in the Vickit and post it back. More details from Stack on 051-933 5511.

which facilitates the display of blocks of machine code for modification or storage on tape or disk. Then there's the assembler itself along with facilities to preset the contents of the processor registers, insert and delete capabilities and a SAVE and VERIFY routine.

Additionally, Mikro Assembler includes a handy High Resolution Plotting facility based on a 176 x 160 matrix — so you can draw lines, plot points, specify colour. Also built in are sound controls — the user can set volume, pitch and duration.

Mikro Assembler costs £49.50.

We have of course asked for review copies of both packages. Meanwhile you should be able to get them from Vic dealers or direct from Audiogenic

Cockfield correction

Back in February's issue of the magazine we printed a letter from Roger Cockfield that included an interesting and short effects program. We only recently noticed that it contained an error, and last month's attempt to correct it failed miserably. Here's the correct version — try it for size!

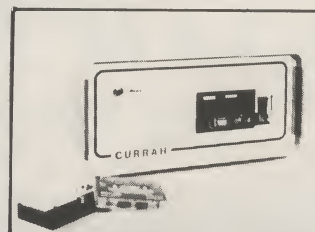
```
100 REM *** AMENDMENT ***
110 REM TO ROGER COCKFIELD'S
120 REM LETTER IN FEB 1982
130 PRINT "J"
140 FOR J=8T012:PRINT J
150 FOR K=8T012:PRINT K
160 FOR X=1T0255
170 POKE 7680+220+X,X:POKE 38400+220+X,JORK
180 NEXT X
190 NEXT K
200 NEXT J
```

Currah price cut

Earlier this year we reviewed the Currah Computer Components 220M digital recorder, a clever box that offers superfast cassette operation with dictation-type minicassettes. In general we like it, though we had some quibbles.

Currah seems to have taken our comments to heart and wrote to us recently about enhancements. It seems the software has been tidied quite considerably: the mains cable supplied with the unit is now double the previous length: clear instructions as to which way up the connector ribbon is to be inserted are now apparent in the manual; and an improved operating manual is now available (supplied free with every unit). Currah says the first three of those points "were acted upon by our company as a direct result of constructive comment from your review... We feel that this may well be worth editorial comment as it is a direct reflection of one of the many intangible services a magazine such as yours offers free to its subscribers". How kind.

But the best news is that Currah is dropping the price of the thing to an inclusive £149.49. That covers VAT, a cassette to get you started, manual and connectors (naturally), free delivery and free transit insurance. Currah is on 0429 72996.



Toronto tips: Some goodies gleaned from TORPET, the very excellent publication of the very active Toronto Pet Users' Group. They come from one John O'Hare. First, to do a 'soft' reset on the Vic try typing SYS64802. Second, if you're getting RF problems with your Vic try opening it up (careful!) and locate the small blue-enamelled 'pot' behind the video cable connector. Turning this gently will adjust the intensity of the video signal and may well improve the picture you get.

Reference Guide references: From the same source come three corrections for misprints in the Commodore Programmer's Reference Guide that could cause serious problems. On page 89 line 20 in the bottom program should read:

20 FOR = OTO7:FOR M = OTO7.

On page 90 line 5 at the top should read POKE 36869 not 36849. And on page 91 line 100 of the sample program is missing a right parenthesis at the end.

Gang of games: Interface, the company responsible for Getting Acquainted With Your Vic-20 (by Tim Hartnell) and Symphony for a Melancholy Computer (24 Vic games), has now come up with "thirty great games" in a £6.95 publication called Zap! Pow! Boom! They're all arcade-style games, they're all pretty short, and we haven't tested any of them yet.

Hold on I'm Coming: A combination of postal delays in North London and a most unexpected influx of readers' programs in the summer combined to cause the odd hiccup (well, breakdown) of the 'Victuals' processing department. We got a long way behind in acknowledging receipt of tapes and testing them: sorry, but things should be better now. If you've sent in a cassette and haven't heard a peep, get in touch with us ASAP.

Confused about your sub? When we inherited Vic Computing we were not a little confused: was the second (Christmas) issue in fact the first? For some reason the VERY first issue seems to have been known as issue 0 in some circles whereas our subscriptions department didn't think that was possible. Anyway it was — so all you readers who have already received a subscription renewal notice for October be assured that volume two in fact begins with Christmas 1982 and your records have been altered accordingly. Our thanks to those subscribers who made this clear to the puzzled circulation people.

WIN A 64!

The Competition:

This must be one of the easiest competitions you'll ever enter. It comes in two parts. *First*, you have to design an 'Easy Riser' program (or a set of interlinked programs) that will provide someone with an easy, sane and helpful start to their day. All you have to do is describe what happens in the program and how; and we want you to give the program a name of your own. You don't even have to write the actual code!

Second, we're interested in what you regard as the most important aspects of a home computer. So from the list of ten salient features of the new Commodore 64 we want you to pick the six that you regard as the most significant and then rate them in order of importance.

The prize:

A brand new Commodore 64, as reviewed enthusiastically by us in this issue — a fine colour computer with a 40-characters-per-line screen and a full 64K memory, great graphics, amazing sound, and full compatibility with existing Vic peripherals and most existing Vic programs.

How to enter:

What's more, if your Easy Riser program is good enough we'll try to find you a publisher for it!



The closing date for entries is 31 December 1982. All entries must be accompanied by the official entry form.

The competition is open only to Vic Computing subscribers. It is not open to employees, affiliates and very close friends of Vic Computing itself. The winners will be announced in the first Vic Computing of 1983. The editor's decision is final and not to be quibbled with.

The Form:

Your name: _____

Address _____

Postcode: _____

STD phone number: _____

NAME OF PROGRAM _____

RATE THE 64

ONE — Design a program, or a set of linked programs, that starts the day for its user. We aren't going to tell you exactly what this should cover: but obvious ideas are a digital alarm clock, a 'things to do today' reminder file, a menu planner with calorie counter... and so on.

Don't forget that different kinds of people might want to use the program; and different people get up in the morning to do different things — like some go to school, some go to the office, some go to the shops.

You should provide as full a description as possible of how your program will run on the computer — and yes, you can assume that the full 64K of the Commodore 64 will be available to you. But that doesn't mean we will exclude systems which fit on to a Vic-20 (though an expanded Vic will almost certainly be necessary).

As for peripherals, you can assume that you've got a printer and a cassette unit. If you need a disk for your programs, make sure your entry says so.

The description of your system should include:

- a *narrative* that says what's going on with a *flowchart* showing how the modules link together
- an *outline description* and a *flowchart* for each program
- a *list* of and *description* for any files you have to set up.

In judging the Easy Riser part of the contest we aren't looking particularly for any wonderful ability to write programs — though that certainly won't exclude anyone! But we *are* looking primarily for two things:

- First, we want an *interesting, imaginative* and *sensible* collection of functions in the program(s).
- Second, we're looking for an *accurate, considered* and *well-presented* description.

TWO — take a look at the following list of features of the new Commodore 64. Select six of them and list them (in the space on the entry form) in order of their importance to you as a home computer user.

1. 64K memory
2. can use existing Vic peripherals
3. can run Vic programs with little or no amendment
4. 40-column screen
5. essentially the same Basic as other Commodore computers
6. can use ROM cartridges from the Max
7. typewriter-like keyboard
8. 12 functions on four user-definable keys
9. very full sound synthesiser functions
10. sophisticated graphics, especially sprites

THREE — Send in your entry. Parcel up your Easy Riser description (*don't* fold it any more than you've got to!), complete the entry form below, and send both to this address:

EASY RISER COMPETITION, Vic Computing, 39-41 North Road, London N7 9DP.

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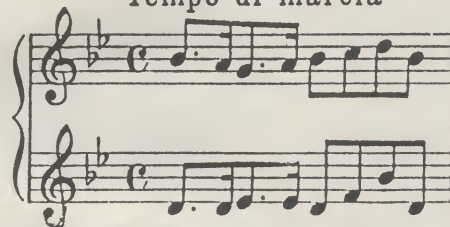
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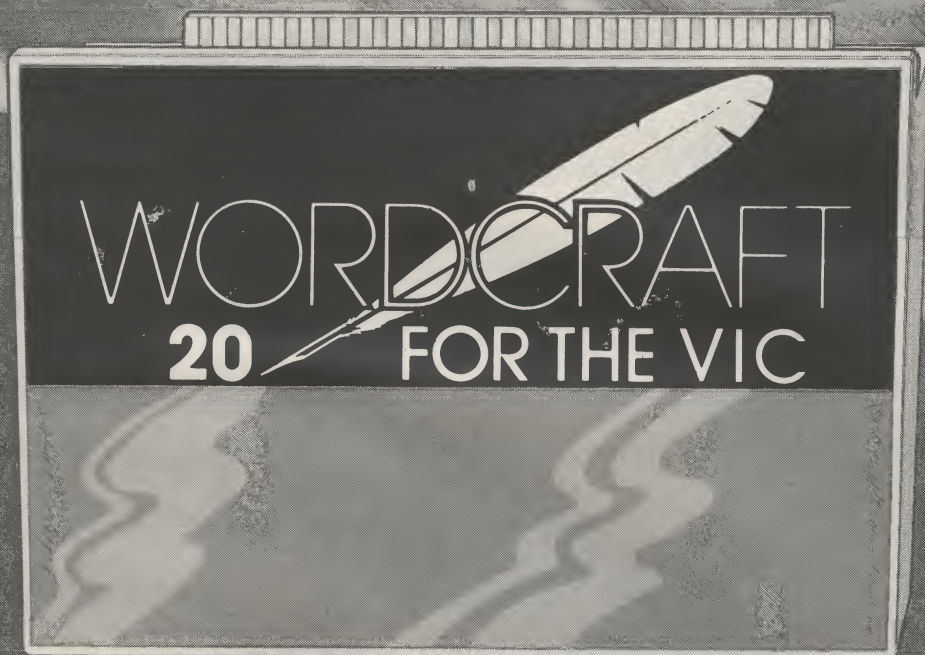
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Just look at these features:

- ★ Full use of colour and sound.
- ★ Full compatibility with VIC 1515 printer, parallel printers or RS232C serial printers.
- ★ Full control over margins, document width, tab

stops, decimal tabs, justified output, multiple copies. Complete control of the final output.

- ★ Automatic underlining and boldening.
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Using cassettes — the easy way

by Mike Todd



Many newcomers appear confused about the use of cassettes on the Vic. The handbook is far from clear and is actually inaccurate. Many complain that they can't write data to the cassette and read it back again and so I'm devoting most of the LORE this time to the simple use of cassettes. It is possible to be more adventurous than I am about to describe but this should provide a starting point for experimentation.

So how do we use them? Writing to a cassette is just like writing to the screen except that instead of each character being printed to the screen it is written to tape as a series of pulses.

Before writing anything the cassette, a data path must be opened using OPEN2,1,1,"TEST DATA". That tells the Vic that we want to use the cassette and it will start the operation by writing the title (in this case "TEST DATA") on the tape. This operation is vital as it marks the start of the data we are going to write — it also ensures that you've started the cassette machine. By careful thought; the Vic can tell that you've pressed a key on the cassette unit, but it doesn't know the difference between PLAY, RECORD or WIND. Therefore it is up to you to make sure that you press the correct keys when you get the message "PRESS RECORD & PLAY ON TAPE".

The first number after OPEN says how we will refer to the cassette in the rest of the program and could be any arbitrary number between 1 and 127. In this case we use the number 2 and will use

PRINT #2 to access the cassette unit. The reason this is needed is that, with disks and printers, it is possible to access several different data channels in the course of a program.

The second number identifies the device we want to use (device number 1 is the cassette unit) and the third is used to select read (0) or write (1). The interpretation of this third number depends upon the device being used.

Finally, the characters in quotes give the data a title which can be used when reading back to ensure that we are about to read the correct data.

During the OPEN command the cassette should whirr for a moment and then stop. The cassette is now ready to receive data. Instead of PRINT we use PRINT #2, which sends the output to the device specified in the OPEN2 command. Note the comma between PRINT #2 and the first variable.

In the early stages of getting used to using cassettes it is best to have only one variable for every PRINT #2 used and make sure that the statement doesn't end in a comma or semicolon. When we read the data back we need a "carriage return" at the end of each item — just as we have to press RETURN when typing data at the keyboard. This will be written to the cassette at the end of the data item provided that we don't suppress it by a comma or semicolon.

Once all the data has been written, it is essential to tell the Vic that we've finished with the cassette unit. This is done with the CLOSE command, which will make sure that the last few data items are written to tape (it is possible that they may still be in the Vic waiting to be written). In our example we use CLOSE2 ; terminate — the number used being the same as the first number in the OPEN command. For reliable cassette operation the importance of CLOSE cannot be stressed enough.

Let's imagine we have set up two arrays in memory, each with 20 items in it — NAME\$ contains the names of friends and NUMBER contains their telephone number.

If we want to record this information on cassette we can do it as follows:

```
1000 OPEN 2,1,1,"PHONE
NUMBERS"
1010 FOR I = 1 TO 20
1020 PRINT #2, NAME$(I)
1030 PRINT #2, NUMBER(I)
1040 NEXT I
1050 CLOSE 2
```

Now we have to read the data back. After rewinding the cassette, we use the OPEN command again but in the form OPEN2,1,0,"TEST DATA" where the zero indicates that we want to read the data. We also include the name we save to the data: and the Vic will start reading the cassette, looking for the title "TEST DATA".

If the name is omitted and we use OPEN2,1,0 (or even OPEN2, since the Vic assumes we mean a read on the cassette unit if these parameters are omitted) the Vic will find the first title on the cassette.

Once found, the data is ready to be read. We simply use INPUT #2 in place of INPUT and make sure that we read the data back in the same order as it was written, although the actual variable names don't have to be the same. So to read back our telephone list we can use:

```
1000 OPEN2,1,0,"PHONE
NUMBERS"
1010 FOR I = 1 TO 20
1020 INPUT #2, A$(I)
1030 INPUT #2, B(I)
1040 NEXT I
1050 CLOSE 2
```

using a PRINT # with several variables in the same way as would be done on the screen can cause problems, since there is no way for the cassette to identify the end of one item and the start of the next. Commas need to be printed between these data items and the INPUT # must match the PRINT # in the number of items it requests. Until you are totally familiar with these problems I would suggest avoiding having more than one variable in each PRINT # statement.

Also, be careful to avoid reading beyond the last item written — if necessary use an invalid item to indicate the end of the data (such

as - 9999) and stop as soon as it is read. Reading beyond the last item written can result in some odd things happening and you'll more than likely get a "STRING TOO LONG" error message — even if you were looking for a number.

If you are in doubt as to what is actually on the cassette, it is possible to retrieve the data character by character and print it on the screen:

```
100 OPEN2
110 GET #2,A$
120 PRINT A$
130 GOTO110
```

This will loop round setting individual characters from tape and writing them to the screen. When all the data has been read, a continuous block of spaces will be printed on the screen. When this happens, press the STOP key — otherwise the routine will continue to try to read data from the tape.

Debugging programs using cassettes is sometimes quite difficult and there is a trick to allow you to put the data on the screen instead of cassette without converting PRINT #2 to PRINT. If you change the OPEN from device 1 to device 3 (the screen) — in other words OPEN 2,3,1,"TEST DATA" — all data will go the the screen instead of the cassette.

Similarly it is possible to mimic the cassette read by using device 0 (the keyboard) in the OPEN command and simulate cassette input by typing the data yourself at the keyboard. In this instance, be aware of the fact that you will not receive the normal "??" prompt; instead you will simply get a flashing cursor.

Because of the way the cassette records data, it is not possible to overwrite individual items of data to update them. Instead, all data must be read into the Vic, amended and then re-written in its entirety. This can be very tedious: but it is the only way.

The entire collection of data written to tape between the OPEN and CLOSE commands is known as the "logical file number".

There can be several FILES on cassette, each with a different



title or FILE NAME. If the Vic fails to find the file specified in the read OPEN command it will continue reading the tape until it finds the file it is looking for. This can be a problem if you have only one or two files on a tape and the Vic proceeds to search the whole of a C90 for a non-existent file.

To prevent reading beyond the last file, it is possible to label it as being the last on the tape. To do this we use OPEN2,1,2"TEST DATA" — in other words replace the '1 (indicating that we want to write data) with a 2 (indicating that we want to write but that this is the last data that will appear on the cassette).

If the cassette is searched and the file we are looking for is not found we will now get a "FILE NOT FOUND" error and the search will stop.

Because the cassettes used are identical to standard audio cassettes, it is possible to listen to a cassette on an audio cassette player. The first thing you will hear is about nine seconds of pure tone. This is "leader" tone used to synchronise the read operation. It is followed by three seconds of buzzing — this will be the title block.

The data is recorded in blocks of

192 characters (which is why the cassette unit stops and starts while in use) and each is preceded by a burst of pure tone followed by about three seconds of buzz which, is the data. Because the data block is always written twice for safety, there is a brief hiccup in the middle where the second copy starts.

A program has the same leader tone and title block, but is recorded as one long block whose length depends on the length of the program — there will still be the hiccup where the second copy of the program starts.

If the cassette is fully rewound, there is a fair chance that there will be up to 10 seconds of non-recording coloured tape at the start. If this tape is less than seven or eight seconds long there should be no problem. But if it is too long the leader tone, or even the title block, may not be written on the actual recording tape.

This is probably the single most likely cause of cassette read/write failures since the read operation cannot be performed without this leader tone and title block. The solution is to ensure that the cassette is wound to the end of the coloured tape before recording or to use so-called "leaderless" cassettes.

HIGH QUALITY NEW PROGRAMS TO HELP YOUR CHILD LEARN

PFL is currently testing a new series of educational software and the first programs are now available for sale to run on Commodore and Sinclair micro computers. The software is specifically designed to provide controlled drill and practice in graded exercises for children aged 7-11 in the following subjects:

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For further details please write to PFL at the address below, stating whether you are a parent or teacher, the type of computer available and in which subjects you are interested.

Programs For Learning, 4 Stanley Road,
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It is feasible to use the Vic as a business computer. Memory expansion is becoming common, more and more software packages are being developed for business and other non-games uses, add-on devices like disk drives and printer interfaces are falling in price. The Vic is starting to look like a sensible low-cost option — at least for some business uses.

Vic Computing will reflect this trend in its regular 'In business' pages. We will be assessing exactly what the Vic can and cannot do: we feel that within limits the Vic can be a useful tool in business, and we intend to find out

just where those limits are.

In business' will comment on new products as we hear about them, and we'll review the more interesting. We will look for and report on real-life business applications. We have commissioned a number of business-related programs that will be printed here; we will also put in any appropriate readers programs we receive.

We are looking for feedback from you, too. Write with queries and comments. Let us know what you want from this section of the magazine. And please tell us if you have interesting applications for the Vic!

Report from the front line: what can the Vic really do?

by Mike Grace

The Vic 20 is a lovely computer for a beginner — cheap, capable of expansion, superb keyboard, backed up by Commodore, and in many ways ideal for the often-quoted first time user who wants to buy a 'toy' to learn Basic and can then leave his machine with the kids to play Space Invaders while he moves on to the 'bigger' stuff. Or so I thought when I first began to seriously contemplate my initial purchase about nine months ago.

But the 1982 Commodore Show changed all that! Software of increasing complexity and decreasing cost lay sprinkled between the flashing games and the serious Pets, enough of it to make the glossy Commodore brochures for the Vic more than just a dream. It made me realise, as I strolled from Stand to Stand knowing I would never have time to absorb it all, that perhaps I wouldn't have to trade in my Vic for a Pet, or a 720, or whatever was around when I could afford it. In fact, I suddenly became very interested in the applications that I might be able to achieve without upgrading the machine. And that was when my troubles began.

Whilst I was just a minor games-player and a budding Basic programmer things were just fine — because I could stumble my way through the articles and the books with a slight comprehension about what I was doing. But once I had made the transition to possible business-user then I was alone, adrift on a sea of ignorance. Magazines like **Vic Computing** and the rest cater for the enthusiast, and whilst much of what they

write assumes a basic knowledge that I do not have I can rest assured it doesn't matter when the article is totally incomprehensible because it isn't that important to me anyway, and if I come back and read it again in a couple of months I'll probably grasp a bit more, then a bit more, and so on. But, having decided to run my Vic for my business I need to know things now, immediately, and everything I don't know matters a lot because it's time — and that's money! Worse, there don't seem to be any articles in the magazines for me, and as for the software instructions with the few cassette tapes I have already bought — if it weren't so sad it would be laughable.

Why is it that everyone who writes articles for computers or instructions for software assumes I know more than I do? It's not confined to the cheaper machines and tapes either — I have experience of a £12,000 word-processor at the hospital where I work and the manual for that is far worse than my Vic user Guide that came with the machine — in fact Commodore Guides have been very good so far (except for the 1515 Printer, but more of that in a moment).

But, having made my decision, bought the 1515 Printer and ordered the disk drive, I suddenly had to make things work the way I wanted.

Applications

In all the magazines I had read about using computers in business the advice was always the same —

decide what you wanted to do with your computer first, then look around for the right software, and only then buy the hardware. The reasons for this are fairly obvious, most of the hardware is the same but buying the software that does (as near as possible) what you want is the tricky part.

Now this concept is all very well when you are purchasing a system in the range of £5,000 upwards, but if you are restricted to a few hundred pounds for the whole package then it's not so easy. I had already decided on the hardware — the Vic-20 — by virtue of its price and so for me the problem was one of making the software fit my needs, or in view of the shortage of software it was more a case of making my needs fit the software.

Could it be done?

First, I had a close look at my own needs. After a few weeks I had honed down my real needs to just a few, after starting with unrealistic aspirations whilst the micro-bug was still overwhelming in my life (and I thought it would be the answer to every problem ever created), which were:

1. **Word processing.** I write quite a lot and having had experience of a dedicated word processor at work for several months I really appreciated the scope and value of the things.
2. **Mail shots and addressing envelopes.** This is where the micro is of superb value: once the list of addresses has been keyed in, it's possible to run off the program in minutes and get a whole new list of the same addresses very quickly. Also updating an amending is relatively painless.
3. **Database applications.** This means the same as indexing and cataloguing information so that I could ask for a list of items from the storage and could list out (or print out) various items as required. For my own use it meant putting the slides I use in teaching, the tapes I have built up, articles in magazines, etc. onto file for quick and immediate access.
4. **Learning to program.** The most obvious use for the machine when I first bought it, but beginning to dwindle in my list of priorities as the more urgent applications appear. This is a point I feel the manufacturers and dealers should bear in mind — that as more software appears so it becomes more important to write instructions and guide books for people who will have less and less experience of computing and programming.

5. **Home use and games.** Last on my list but no less important for that. Games are fun, and I've learnt most of my own programming from games. Christmas card addresses, playing chess, cataloguing stamp collections, all have quite a high priority on my list.

Having made my list I went to the Commodore Show to look at Pets, and at the new breed of machines coming along — and as I've already said came away convinced my Vic-20 was already capable of all those applications. But having the potential and actually putting the machine to work did not prove as easy as I'd hoped.

The 1515 Printer

Before the Commodore Show all I had was the basic Vic-20, the cassette, and the 'Introduction to Basic Part 1' course. I'd acquired a few tapes and a lot of magazines — but that was all.

At the Show I decided to take the plunge and bought several cassette tapes, 16K of extra RAM plus the 1515 printer, a program to enable me to run my own labels (ADDRESS BOOK from L. & J. Computers) and a simple word processing and database package (the appallingly named RABBIT-BASE and RABBIT-WRITER). The most important of these purchases was, of course, the printer.

I'd read a couple of reviews on the 1515 and they'd given it a good report, so I hurried home to eagerly unpack my new toy. Let's face it — we're all a little like the child with the new toy with our computers; and I'm no exception. Setting the machine up was no problem at all, the manual was both simple and easy to follow, but my initial problem was that I had no paper and I had not been aware of the difference between tractor-feed and friction-feed printers.

In simple terms — friction-feed is like a typewriter where the paper is moved forward by the friction of the roller against a plate or something, tractor-feed is where the paper is moved forward by the use of sprockets which engage into the holes in computer paper. The relevance of this is that while friction-feed will take both computer paper and ordinary paper (either will do), tractor-feed will only accept computer paper with the holes at the edges. I had thought I could use my headed notepaper, or scrap paper, or whatever: I couldn't. Frustratingly I had to ring around until I could find a local dealer who had some paper in stock, which took quite a time.

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
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In Business

bit steep, but I was unaware of the hidden costs of computerisation) and eagerly fed the paper into the printer and opened the instruction manual.

I said earlier that I had found Commodore's manuals easy to follow, but this was not the case for the 1515. Part of this may be my own fault, as the first page of the manual does state that before using the printer one should be able to do elementary programming in Basic (how elementary is that, I wonder?) and be able to write files from a peripheral device such as a tape recorder.

Now I'm not sure quite what writing files is all about: to me a file is a thing that hangs in a filing cabinet. No-one seems to be able to tell me in simple terms *exactly* what a 'file' is — yet.

The printer manual refers me to the user manual for further information, (which is fair enough I suppose); but the user manual tells me about storing 'data' on tape by 'opening files', something I neither want to do yet nor appreciate the significance of its value to me. I want to use my printer to **print** — either listings of my programs or running a program with PRINT statements in

it, and the manual seems rather vague about that.

I struggled through the first few words about OPEN and then was faced with the inexplicable statement that I could select CURSOR UP or CURSOR DOWN modes if I wished. I can understand the difference between SHIFT UP and SHIFT DOWN on a typewriter, but I haven't a clue what CURSOR UP and CURSOR DOWN means — or perhaps of more importance, why I should want to select them anyway. The manual doesn't help at all by explaining why I might want to select UP or DOWN, and to be truthful at the early stage of reading I found the 1515 manual to be distinctly lacking in information of why I should want to do most of the instructions that are in the book.

I did manage to solve the important problem of printing out both a listing of a program (marvellous to be able to look at the whole program at one moment instead of fiddling about on the screen) and printing out instructions from a program by typing run and watching the printer zoom through a list of items.

Is The Printer Worth It?

It would be easy to carry on

complaining about things, but that puts an incorrect slant on my situation. I have found the printer invaluable! The ADDRESS program is an absolute boon — as I now load a series of labels into the printer and then just sit back and watch 100 addresses being painlessly printed.

So, I am managing to convert my 'toy' computer into a real 'business' machine. At the moment I am finding the restriction of having to remove the 16K cartridge a bind — especially as I now have the Programmer's Aid cartridge, which is just the best thing since sliced bread!

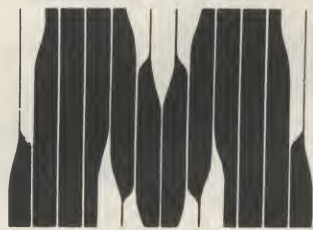
In short I am finding the Vic coping extremely well with my limited wants, apart from the word

processing aspect which is not yet good enough for me; but Rabbit-Writer at about £10.00 is good value for a very simple application, like writing 'thank you letters' after Christmas, say.

Perhaps most important of all is that the Vic-20 is giving me experience in the hazards and hassles of computing at a reasonable price. If only the manuals were written for idiots like me who don't seem to know anything until its been explained in the simplest of terms, and if only the computer magazines could concentrate a little more on applications instead of hardware and concepts, or big business machines that are way out of reach of the average pocket — then life would be a lot easier.



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A Punter's Progress: Episode Two

by J D Collins

Armed with eagerness, good intentions and a decent-sized chequebook, Average Reader J. D. Collins runs his hands lasciviously over his recently acquired Vic and lovingly massages the mixture of new-found knowledge and baffled despair that will be so, so familiar to newcomers to the Vic.

Time passes and the mystery deepens. I'm using my Vic a lot more now but that doesn't mean I know what I'm doing.

So what good things have I got to say about it so far? Well, I like it, that's a good start. I like the large size of print on the TV; other micros I've seen have such small letters that with the television at what is for me a comfortable viewing distance the lettering is unreadable. The keyboard is ideal for me to use: there's a nice, robust feel to it, it's quick to respond to finger pressure, and it's big enough for all my ten thumbs. I couldn't stand the ZX81's fiddly little plastic whatnot! The cassette unit is a little gem — from what I've read of the ZX81's load/save problems, the Commodore unit seems ultra-reliable. Good job, too: if I'd had problems with loading/saving on top of all my other disasters I'd have blown my top by now.

I seem to be comparing the Vic 20 with the ZX81 all the time. Well, that's not too unfair. The ZX81 was the main contender

when I started down this particular slippery slope.

The bad things so far are mainly hardware problems also. I'm not happy with the external power transformer and the video box: the video box seems to be a bit troublesome. I don't know whether it's a loose connection, but every now and then the screen goes all wiggly and I have to bang it about a bit (the box, that is). It wouldn't have been too much trouble for Commodore to have put them inside the Vic, would it? What if the thing is being used by the very young?

I keep thinking wires will fall out. The socket for extra RAM/ROM also troubles me. It seems very weak mechanically. Are these things worth worrying about? I can't say I've had any serious troubles, but would it be suitable for a nine-year-old? When I was nine, I just loved pulling things apart!

I think the limited screen size is a bit mean, too, but I suppose Commodore has some excuse. These gripes aside, I was soon feeling that I wanted a bit more action; and I decided to get a games program to brighten up my life.

At that time just about all you could get was a couple of Commodore's cartridges (they cost HOW much ?!!&\$*?) and a couple of tapes (cheap and cheerful). Off I went to my Vic suppliers in West London.

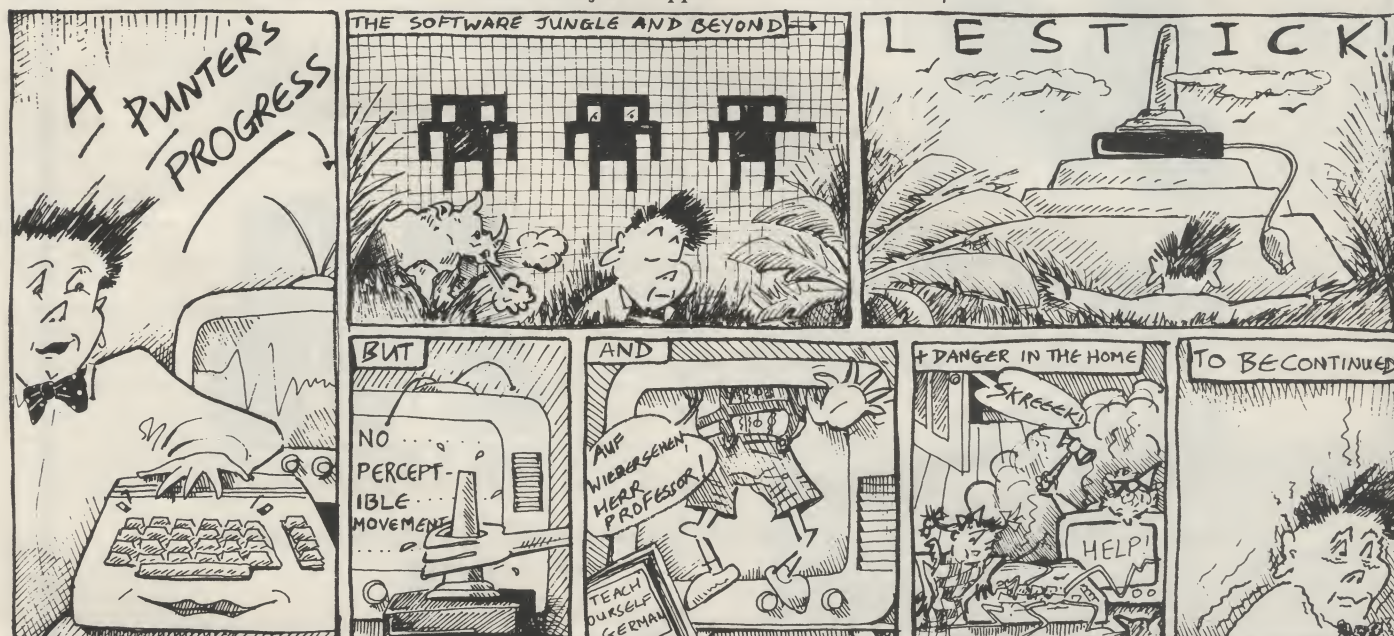
When Adda Computer Saturday staff had dragged themselves away from their Ataris (have I made an awful mistake?) I got a demonstration and settled for Creative Software's "Sea Wolf/Vic Trap/Bounce Out" cassette.

Quite good value, I thought at the time — though now I think that even £10 might be a bit too expensive. Don't get me wrong: the games are good, but not £15 good.

A couple of weeks later, I decided I could afford a joy-stick — "Le Stick" no less! Everybody raved about this piece of electronic wizardry, so of course I had to have one.

Was I the only customer to get a dud? I had to hold the thing upside-down over hot coals to get a response, and I thought it was supposed to be super-sensitive! To get its own back, it would wait a while, until I was all lulled into a false sense of security, and then cause a crash with an illegal quantity error, at a vital moment in the game. Nasty, vicious French thing! Back to the shop, and much shouting later I exchanged Le Stick for an extra 3K RAM. Bound to come in useful, eh?

Swept away on a tide of enthusiasm, I started my trek through the software jungle. Talk about caveat emptor — what a load of rubbish! Maybe it wasn't all bad, but I'd only bought about five programs by



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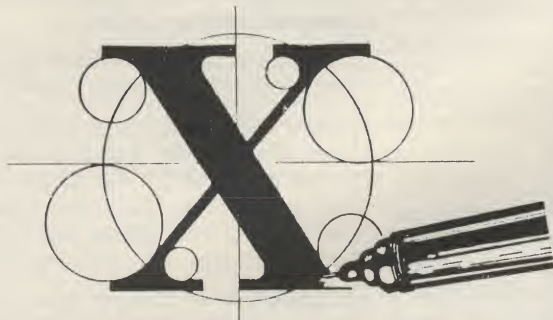
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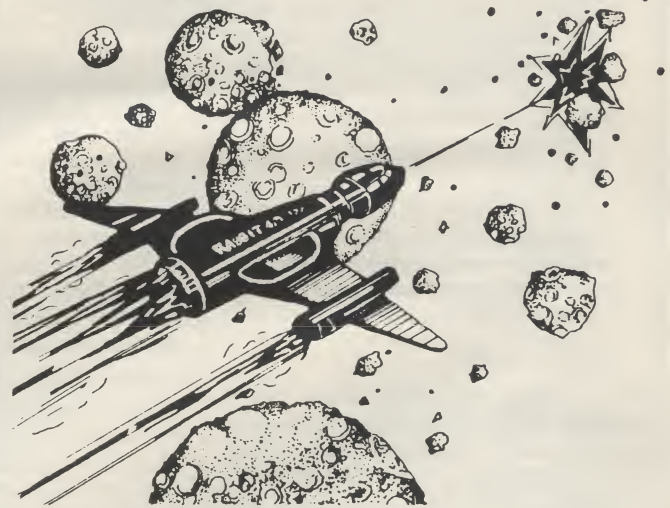
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BEGINNERS

mail order when I swore to buy no more until I'd seen the things in action. So what did I get?

- 'Ten Programs', cassette, from dK'tronics. Of the ten programs the only one with any originality was 'Word Games', which I found quite fascinating, though being a word game the graphics were non-existent. 'Tanx' seemed to be a Llama's alter ego trip, and noisy to boot. 'Music' might be ok, but since I'm not musical I don't know how to use it. 'Space Zap' was a good idea, but the energy limit was a bit restrictive. Nothing I could do would make 'Master Mind' work: I just got an unspecified error report. Still, ten programs for less than ten quid is not too bad, I suppose.
- 'Rox' and 'Deflex', cassette, from dK'tronics. 'Deflex' wasn't all that much different from 'Bouncy' (courtesy Vic Computing) and 'Rox' was awful — black sky and dark red or blue laser beams equals invisible game! Heaven only knows what it's like in action, I can't even see it.
- 'Vic Gammon', cassette, from Bug Byte. This made use of my extra 3K memory. Though the game is good enough to knock the spots off a beginner like me, the graphics aren't great.
- 'The Alien', cassette, from Audiogenic. This also used my extra memory, and seemed a moderately good maze game. (Am I damning with faint praise?)

Being generally dissatisfied with programs so far, I hot-footed it down to the North London Computer Show hoping to see some programs in action. But it was not to be so simple! Of all the software vendors there I thought Hi-Tech had the best range of programs and persuaded them to demonstrate a selection of 3K and 6K games. Most were a bit bland, to say the least, but at least you knew what you were getting. Then came the funny bit. "Missile Command" seemed the best of their games, but it had this really unpleasant grating noise as a background (or even foreground) to the usual fun whizzbangs. Talk about instant earache! "What's that funny noise?" I asked, thinking it couldn't possibly be part of the game. No answer. "What's the funny noise?" I asked again, sweetly. Silence! Four askings and kick in the shins later, I received the comment that it would go away if I turned the volume down. Yes, it did, but so did all the fun whizz-bangs. Sorry, but if that's the best you can do I don't think I'll bother. And I didn't.

What I want to know is, apart from where to get good programs, why oh why do the writers of these games choose such terrible colour combinations? Black is a lousy colour for contrasting any other, on my ex-rental TV set anyway; even on the household's super-modern remote control job, a black background swamps everything else. Have these programmers got X-ray vision, or what? Come on, you guys, if there're aliens in them thar hills, then the hills can be a nice clear yellow, the sky pink and the lasers purple.

I think I might have found one program worth having: it's 'Space Storm' from Rabbit Software. I know it's good, because I've seen it demonstrated. Super graphics, really fast action, lovely whizzbangs. But I won't be really sure until they send me my third copy, assuming it will load. What we need is a really comprehensive survey: how about it, **Vic Computing**?

Another thing that really gets up my nose is all the hype in the micro business. Commodore advertises a whole range of exciting products to get you all worked up — and then cancels the whole idea. Take its software, for instance: 'a full range is available' — pull the other one, mate! There is supposed to be a German-language tutorial program available. I've always wanted to learn German. But when you ask anybody about this program, they act as if you've just arrived from Mars — stutter stutter, blush blush, mumble mumble. And what happened to the nice sleek Commodore Motherboard, eh? I don't happen to like the Arfon Motherboard. It looks nasty and lumpish, and the sockets for the extra bits and pieces aren't switchable.

Which brings me to memory expansion. Some adverts say you can expand the Vic-20 up to 32K, some say 29K. What's the difference? How much memory and of what kind (CMOS/NMOS) can be fitted to the basic machine without an extra power supply?

My progress with Basic is not going as I'd planned. **Vic Computing** doesn't stop publishing all those lovely games programs, I'll never finish Commodore's Basic course!

Can you tell me how to change the print colour in the 'Task Interrupt' program that you've published, and why are the last dozen or so lines of 'One Armed Bandit' mixed up and mis-numbered?

Can you also print a guide to your programs, explaining which bits of the programs do what? It would be useful for a beginner entering these programs to have explanations about what he's doing, as he's doing it. I get bug-eyed and legless over trying to work out why my programs

don't work, but don't give an error message, and I've no explanation as to what is happening inside the program.

From now on, I shall have to forswear your games programs until I've got through the Basic course, otherwise I'll run out of intelligent things to say. I hope my half-remembered maths can get me through, as some of the later stuff in the Basic course seems very mathematical.

One last thing. You keep saying how easy it is to use user-defined graphics in programs, and there are several programs around which help you to design such graphics. But how can I actually get one of these graphics into the right part of a games program? Careful — I won't understand your reply unless it's really spelled out in detail.

To be continued. . .

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Editor's comment

The earliest Vic games weren't great, but our own view is that the general quality has improved immeasurably even since the Spring. It's the kind of business where the games authors can learn really quickly, borrowing ideas and spotting defects: and they can react swiftly too, with better games following hard on the heels of their first efforts.

We're trying for a massive round up of software reviews for our Christmas issue.

The 29/32K syndrome puzzles us. In fact we've heard there are ways of addressing a full 64K with the Vic, though we don't know of them (any info gratefully welcomed). The official line is that you start with your 3.5K and stop at 29K.

Commodore is about to start selling its German-built expander board again, following the recent events at Arfon. It's nicely constructed, but it's not cheap (the revised price will probably be £99.99 or some such). Stack still seems to lead the field value-wise if you want a low-cost expansion chassis for extra cartridges.

Sorry about 'One Armed Bandit', J.D. Some spurious lines attached themselves to the end of the program: just ignore everything after line 10010.

We're considering asking readers to provide more of a description of what happens and how in the programs that get submitted to the **Visuals** section. But it would take up more of the magazine, so we'd lose other stuff. Which do you want?

As for graphics, articles are on the way!

BOSS

The Definitive Chess Game for the VIC

- ★ 10 levels of play
- ★ Beats SARGON II
- ★ Chess clock
- ★ Wide range of opening moves
- ★ En passant, queening, and castling



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Available from Audiogenic, PO Box 88, Reading, Berks. (Tel: 0734 595647) or from VIC dealers, £14.99 (inc. VAT, p&p). Credit cards accepted. Ask for full catalogue. BOSS is copyright. KAVAN SOFTWARE 1982. *Requires 8K minimum.

VIC, CBM-64 OR PET SOFTWARE

NEW SYNTHY-64 - music synthesizer for CBM-64 \$35 [40]. **FANTASTIC!**

GRAPHVICS - adds 18 commands to VIC BASIC. Plot 152 X 160 points Hires & Multicolor modes on same screen! Text & graphics screens. Save/load pictures to/from tape or disk. Requires 3K/8K expander. With sample programs and user's manual. \$25 [\$30].

VIC or PET VIGIL - interactive games language. Program your own or play the 9 games included. With 60 plus powerful commands. VIC version has sound and color (requires 3K/8K expander). With user's manual. \$35 [\$40].

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NEW VIC JOYSTICK PAINTER - Paintbrush for VIC MULTICOLOR mode pictures. Save to tape or diskette. Requires 3K/8K expander and a joystick. \$15 [\$20].

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BASIC REFERENCE CARD - handy card with all BASIC commands. \$2.50 [\$3.00].

NEW VIC MACHINE LANGUAGE GUIDE - explore the hidden talents in your VIC-20. More than 30 routines fully detailed. \$7 [\$8].

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PET MACHINE LANGUAGE GUIDE - for OLD, NEW or 4.0 ROMs. \$9 [\$11].



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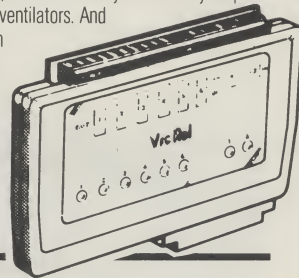


ORDERING INFORMATION:

FREE POSTAGE. All prices are for cassette. Add \$3.00 per DISK package. Foreign prices in []. Manuals available for inspection, creditable towards purchase of software \$5 each [\$7 foreign]. All orders must be prepaid in US Dollars via check, international money order, VISA, MC, ACCESS, EUROCARD. Look for our CBM-64 Software Soon.

FOUR NEW VIC ADD-ONS FROM ADDA

- 1. Light up with VicRel.** VicRel is a control relay that plugs straight into the Vic user port to give simple, programmable switching of electrical apparatus in the home, office or factory. Its six relay outputs can control door locks, lamps, valves, tools, ventilators. And two inputs allow the Vic to read signals from external sources such as thermostats, push buttons or light activated switches. VicRel eliminates black boxes full of wires and represents one of the most exciting, value-for-money, firmware additions to any Vic computer system.



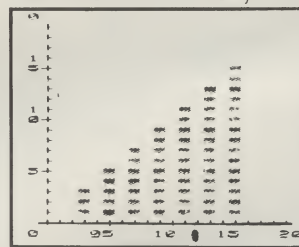
£28.95 INC VAT

- 2. Plot away with VicGraf.** This cartridge allows you to explore the complicated equations and functions of graphs. The menu screen, activated by the Vic's special function keys, will automatically plot a graph, define new functions, calculate accurate values of an intersection, find the maxima and minima of a function. Simple editing allows you to check current functions and to change them. A necessary and attractive addition to any educational situation where graphs need to be explored.

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- 3. Crunch & Display with VicStat.** A plug in cartridge that undertakes statistical calculations—such as Meanvalues, Standard deviations and Variances—and displays using single commands.

Other one word commands allow you to draw vertical and horizontal bar charts,



to plot graphs, and to specify the scales and the colours used by these commands. It will also sort numeric and character strings. Finally, all or part of screen displays can be copied to the Vic Printer.

VicStat comes complete with a detailed operating guide.

£28.95 INC VAT

FORTH

The VicForth plug-in cartridge, complete with 3K of additional memory, takes programming into new dimensions. As both an operating system and program development aid VicForth can speed up program writing and speed of operation.

VicForth is based on fig-Forth and is almost identical to Pet Forth. It does however support the Vic cassette deck—an unusual feature. For those who do much programming a Vic Disk unit is suggested. VicForth provides several hundred one-word commands—listed in the detailed user guide—that can be added to.

£38.95 INC VAT

ADDA COMPUTERS

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In case of difficulty—or to see demonstrations—call the VIC Centre 154 Victoria Road, London W3. 01-992 9904.

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Under Review

The Commodore 64 — it looks good!

by Steve Beats



The 64 is one of the new babies about to emerge from the Commodore stable and is likely to be aimed at the small business and home user market. After using the machine for several weeks now, I am convinced that it will be a flyer and should succeed in taking a significant bite of the market which has been Apple's forte to date.

The Apple II is definitely Commodore's target. Dealers are being told that the 64 is "otherwise known as the Apple Eater" and costs "less than half the price of the Apple II".

The price is £299 plus VAT. So just what do you get for the money? And should we all throw away our Vic-20s now — or later?

There's no denying that the 64 looks like a Vic. It comes in a casing which is identical to that of the Vic 20, with the exception of the colour and the keyboard pitch. The keyboard has a slightly curved profile and each keytop is moulded to fit your fingertips, as on some Vics — that's a feature that makes it very comfortable to use. The mushroom brown case is reasonably pleasing to the eye: the white characters stand out well against the dark brown keys.

Like the Vic, the 64 gets its power via a separate transformer which supplies 5 volts DC to 9 volts AC to the computer through a seven pin din plug. The socket to accept this is located on the right-hand side of the case and the power switch is located next to it.

The 64 can drive a normal PAL-standard television set PAL is the colour video format used in Britain and most of the rest of Europe), or a monitor. Optional connections for this are provided on the back panel along with a user port, a cartridge slot and a serial interface socket for disk drives and printers etc. Sound on the 64 can either be sent straight to the TV in a composite video signal or fed through an amplifier to produce higher fidelity sound.

Switching on

Unfortunately, the power-up colours are as on the Vic 20 and leave a lot to be desired — light blue letters on a blue background. I can only assume that the programmers of the 64's operating system wanted to draw everybody's attention to the fact that there is a key called CTRL, as it is this one you immediately use to change the character colour to white.

While on the subject of keys, let's first take a quick tour of the keyboard — a trip that will be familiar to Vic owners.

For a start the number keys 1 to 8 have a colour assigned to them, if any of these keys are pressed in conjunction with the CTRL key then the cursor will change to the appropriate colour and any subsequent text will appear in that hue.

But using the 'Commodore' key at the same time as the numbers produces a further eight colours which are not marked on the keyboard. This gives a total of 16 colours directly available.

Most of the keys, besides having an alpha character on the top, also have two graphic characters from the well-known PET graphic set marked on the front of them. You use SHIFT and the 'Commodore' key as on the Vic to shift between them, and to get between upper and lower case modes.

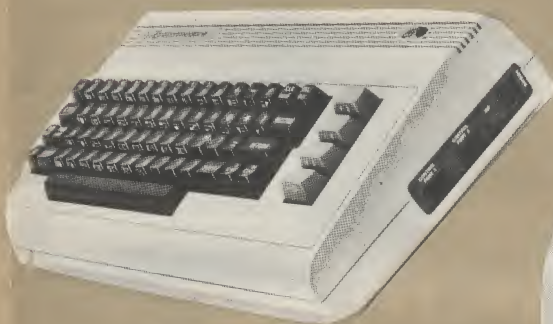
Perhaps the most useful key on the keyboard is the RESTORE key: basically it does exactly what it says. For example, imagine you have just completed a tricky algorithm which you haven't saved; and when you run it the computer crashes irretrievably. Instead of turning the

computer off and going to the pub for a sulk, you can smile confidently to yourself and lightly tap RUN/STOP and RESTORE. And 99 per cent of the time the 64 will reset itself and leave your program still intact in RAM. Of course there is the added bonus that you will still get to the pub 1 per cent of the time.

On the far right of the keyboard are the Vic's four function keys from which you can define up to 12 functions using an interrupt-driven machine-code program.

The Basic

The Basic is exactly the same as that of the Vic. No extra commands have been added to handle the new graphics and sound capabilities, which is quite a pity as this would have made the machine's workings a lot more comprehensible to the first-time user.



However, the manual does go a long way towards correcting this deficiency by supplying a great number of useful tables and charts along with a few handy listings to demonstrate the use of each feature.

For those of you who feel daunted at the prospect of learning yet more POKE locations in order to access the sound and graphics on this computer, worry not. Shortly after the launch a cartridge will be made available which will add nearly 100 extra BASIC keywords for graphics and sound as well as structured programming. See the panel.

On power-up, there is 38K of RAM directly available for Basic text and a total of 54K available for machine code programs or data storage. By altering the state of certain control lines, the memory map can be reconfigured at will — in one case giving 64K of continuous RAM available to the user, though in this mode no input/output ports can be accessed. This reconfiguration facility makes the 64's operating system very versatile and applicable to just about anything the user wishes to do. In all, there are nine different memory map configurations.

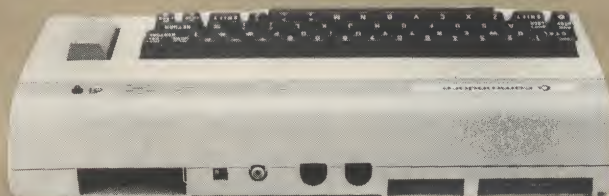
As with the Vic, the fact that the 64 uses Commodore's 8K Pet Basic 2.0 means that most programs written for most 40-column Pets will run without modification — unless they POKE screen locations, since those vary.

The use of the same cassette interface means the 64 can take programs and files created on all other Commodore computers. (Coming soon is a Pet emulator, probably a plug-in cartridge, that will make the 64 look like a Pet for everything except machine language programming.

Electronics inside

The 64's processor is the MOS Technology 6510, the latest version of Commodore's original eight-bit micro. The 6510 has the same instruction set as the trusty 6502 (used on the Vic, Pet, Apple, Atom, Atari *et al.*) but has been given extra I/O facilities. Why? Because if one processor chip has to do everything, it lags things right down: and the 6500 design isn't exactly a superfast microprocessor anyway.

So the 64's processor gets additional input-output lines (in fact half of a 6520 interface chip has been added to it). But the 64 also farms out the processor-heavy time-consuming business of handling sound and graphics.



The 6581 SID (Sound Interface Device) is basically a one-chip music synthesiser that can be run under processor control; and it offers a very wide range of capabilities, of which more later — though it's worth mentioning that it's better than anything else we've yet heard of in home computers.

The display is handled by the 6567 Video Interface Chip as on the Vic — 255 combinations of border and background colours, 16 text colours now, the 64 Pet graphics symbols.

Sprites

And so to sprites. What's a sprite? Well, sprites are what can best be described as large user-definable objects which can be moved around independently of anything else on the screen. Sprites can collide, they can be made to pass over or behind anything on the screen (including other sprites), and they can be opaque or transparent. Still with us?

These amazing apparitions are made possible by yet another new chip incorporated into the 64. You can have up to 8 sprites on the screen at the time and each can be single or multi-colour and expanded in both directions if required.

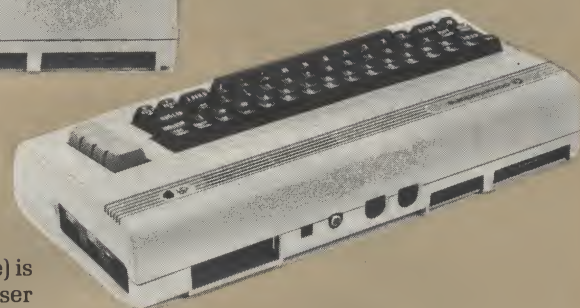
Simons Basic

In sunny Welwyn Garden City there's a boy genius called David Simons. He's 16, and a few months ago he decided to check out the best features available on as many versions of Basic as he could lay his hands on. The result is a kind of super Basic, which everyone at Commodore calls Simons' Basic.

This will be available very soon on the 64 as a plug-in cartridge, and it'll put all other 'programmer's toolkit' packages to shame.

For a start it gives you loads of **toolkit** commands. Then there's a batch of single-word commands to control the screen — set colours, set scrolling with or without wraparound, flash areas of the display, highlight sections.

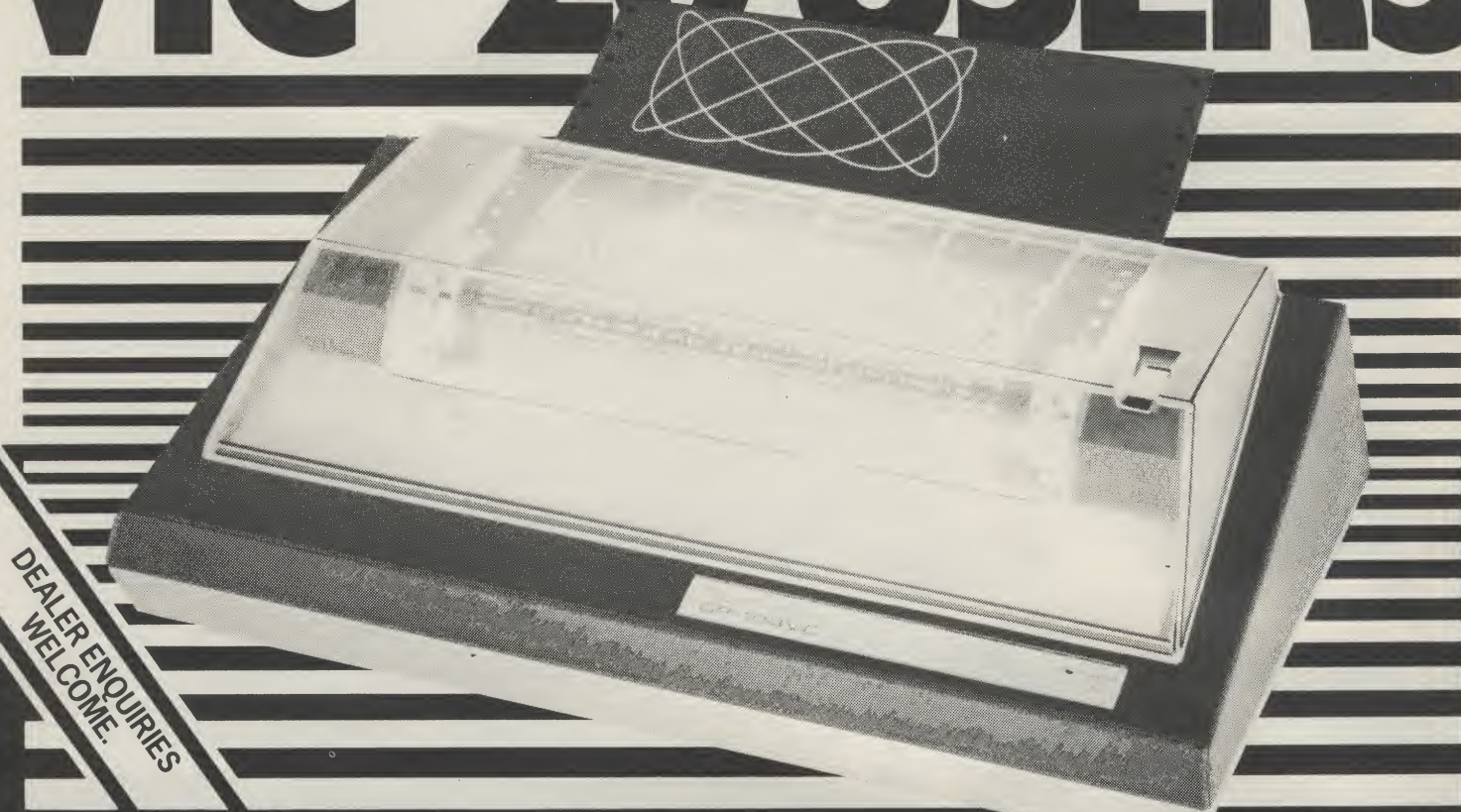
Sound and graphics (including sprite creation) are also in there. And, unusually, so is a collection of structured Basic commands — things like DO WHILE, DEFINE PROCEDURE, END IF. It sounds great.



Each sprite can also be given a priority level so that it can pass over or under any text or graphics on the screen while each sprite is automatically assigned a priority in respect to other sprites. Sprite 0 has the highest priority and will therefore pass in front of sprite 1. If you are prepared to be clever in machine code then you can even fill the screen with sprites by using a special register, known as the raster interrupt register, to time the switching of the sprites to different locations on the screen.

The resolution of each sprite is 24 horizontal dots by 21 vertical, more than enough to define some great looking space invaders or Astro Birds. The method by which you define sprites looks impossible — that is, until you actually start doing it. In no time at all you will have remembered what each location does to a certain sprite and you will be manipulating them as easily as you can manipulate BASIC variables.

VIC-20 USERS



The new Seikosha GP-100VC graphics printer for around £235.^{EX. VAT.}

Offering big printer performance at a fraction of the cost, the latest addition to the famous range of Seikosha micro-printers is the 100VC. The precise match for the VIC 20.

Featuring all the VIC 20 characters, symbols and graphics as standard, the Seikosha 100VC includes full graphics capability. It enables graphic, character and double width character modes to be intermixed on a single line as well as repeating graphics data, as you want, with a single command.

Many other advanced features, plus Seikosha's proven reliability and the nationwide support of DRG's distributor network make the 100VC the natural choice for the VIC10 user.

DIMENSIONS:

Depth - 9¼" (234mm)

Width - 17¼" (420mm)

Height - 5¼" (136mm)

OPTIONS:

Interfacing for most other systems available on the GP100A model.

FEATURES INCLUDE:

- 80 col. 30 cps.
- Dot Matrix unihammer action.
- 154 characters (inc graphics)
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- Full graphics.
- Double width printing.
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The RS232 Interface — Part TWO

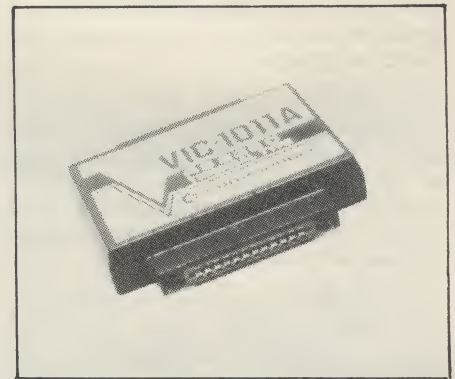
by Jim Butterfield and Jim Law

RS-232 is a specification for the way your computer can connect to a terminal — such as a printer, or maybe even another computer. In the last issue we described how the Vic has a ready-to-use RS-232 interface built in as device number 2; but the internal Vic RS-232 interface is not exactly standard, which is why you need some conversion — either the Vic-1011A cartridge, Stack's equivalent, or a DIY circuit or two. This time we fill in the picture by showing how to wire it to the RS-232 yourself.

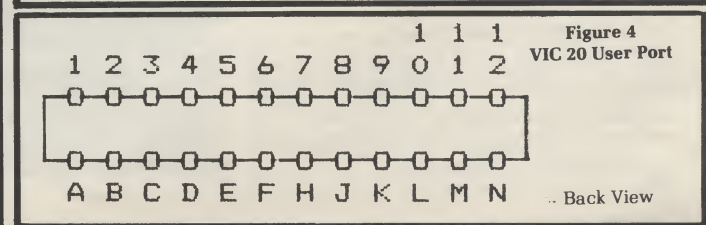
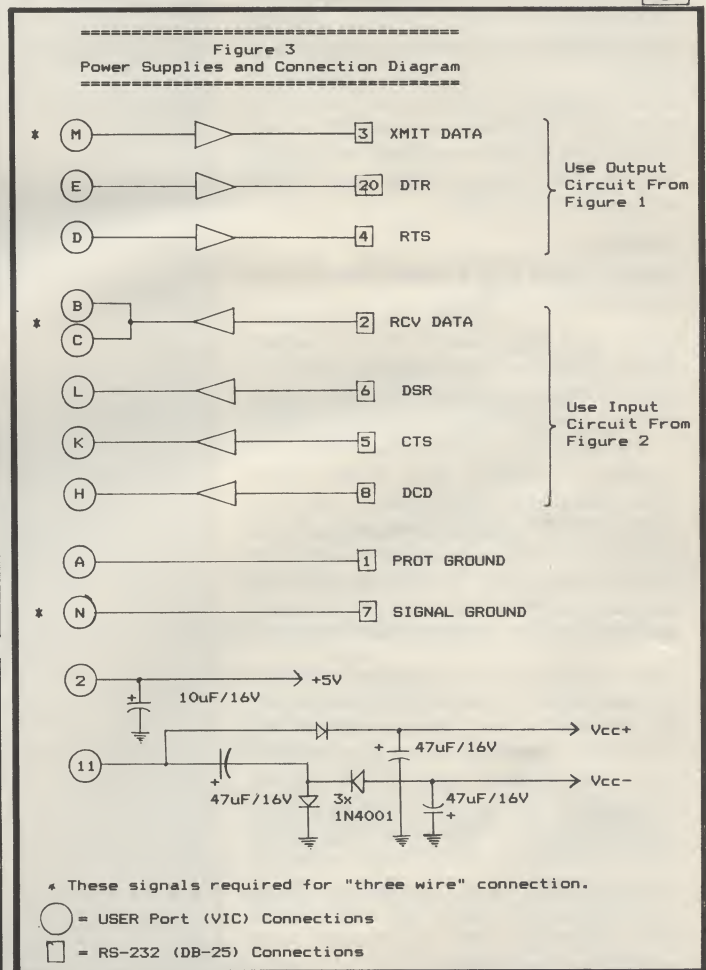
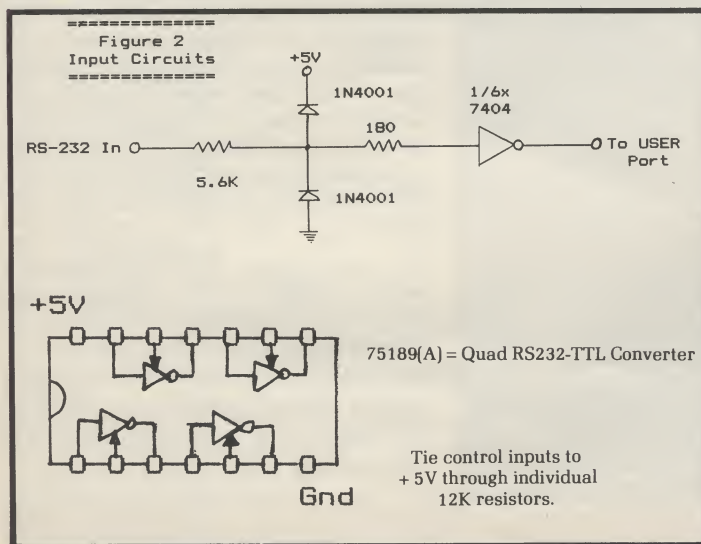
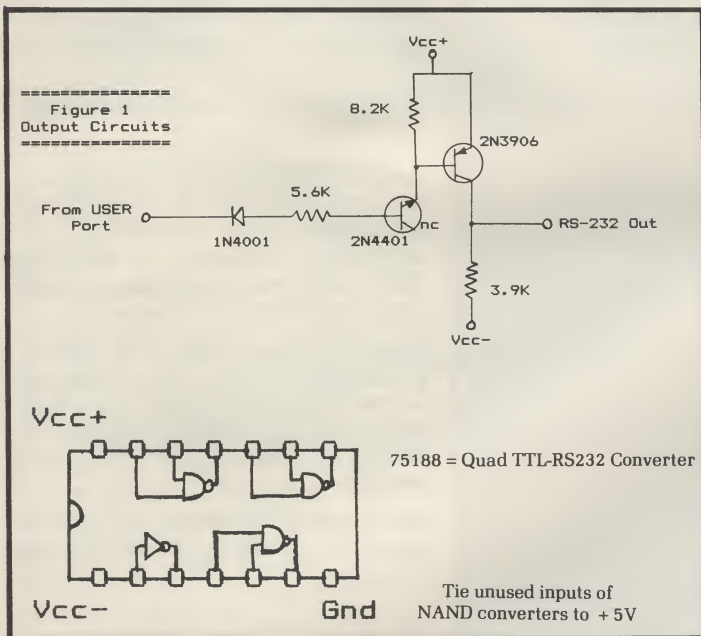
You want to make your own adaptor, two possible circuits are described below. The first uses discrete parts and any well-

stocked electronic junkbox should harbour the necessary items. The second has minimum parts, but the ICs may be hard to find. If you are not handy with a soldering iron, perhaps a friend or a local electronics buff could assemble the interface for you: it's not a difficult project.

The simplest way to connect the Vic with just the two data lines and ground. This 'three-wire' connection will work with most modems and any printer where handshaking is not a problem. If you are using the 'junkbox' circuit make only as many circuits as you need: one input and one output should be enough for a modem.



The official version: Commodore's RS-232 adaptor costs £30.39 plus VAT.



Under Review

In addition to all this, there is also full collision detection between sprites and screen data, and between sprites and other sprites — both of which will be a boon to those of you who wish to write games programs.

To summarise on the graphics, the high resolution is good — though it is quite difficult to get at. It does not use so much user RAM that there is no room left for a program, a limitation that is sometimes met in other machines.

The sprites are great fun to use and should make it possible for users to write games approaching the quality and speed of the arcades without too much effort. Even a Basic program could still offer enough speed when using sprites to make a game really interesting.

In theory the 64 allows you to define up to 256 sprites, but a more practical limitation (imposed by available memory) would be around 48. That's still quite a lot.

Before the 64, the only home computers with sprites were the TI-99/4A and the Atari 400/800. The 64's use of sprites is superior to both; I'm quite prepared to stick my neck out and say that pound for pound the Commodore 64 ranks among the best for graphic capabilities and will soon gather a strong following on the strength of this alone.

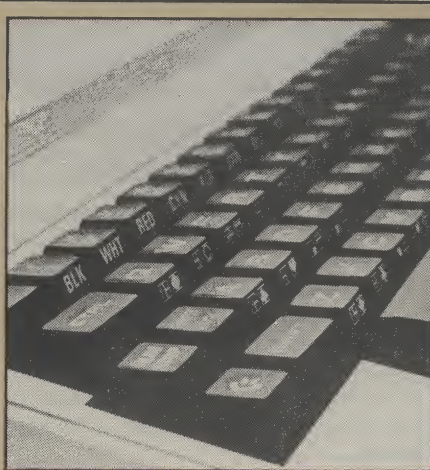
Sound

Magic. That is how I would describe the sound output of the 64.

Ok, so you may have to learn another string of poke locations and you may have many frustrating times when the sound output locks up solid: but it will be worth it. The new SID chip has a versatility and quality of output that rivals some dedicated music synthesisers, and they don't have 38K of RAM attached to them! I'm sorry for enthusing so much, but after being impressed by the graphics I expected the 64 to fall down on the sound section: in fact it did quite the reverse.

That's because the SID isn't just a simple tone generator of the variety found on the Vic and most other home computers. No, it's a real synthesiser. With this chip you have full control over three totally independent voices which can be played separately or all at once: and 'full control' really means just that. Under software control you can specify volume, attack, decay, sustain, release, high, low or band pass filtering, ring modulation and waveform.

Maybe that lot doesn't mean so much to you. Well, it's the attack/decay/sustain/release combination which enables a synthesiser to emulate the acoustic performance of something else — like a musical instrument.



Ready-software

Nearly all of the applications I have spoken about give the impression that the 64 is going to be an expensive games machine. This is far from true: there are already many business packages nearing completion.

Of the Commodore-derived products there is a **word processor** nearly finished: it's called *EASYSRIPT*, derives from a nice Pet package called *SUPERSCRIPT*, and will retail for about £60.

An **electronic spreadsheet calculator** is also on the stocks, due for release at the start of next year. Commodore has a choice of two under evaluation right now.

Other business-oriented goodies promised are a **mailing list** program, "several" **file managers** ranging from a simple 'electronic card index' to a full-blown database system, **stock control**, and **accounting**.

On the program development side, as well as the mighty impressive **Simons' Basic** the big news is that the 64 will get a **compiler Basic**. This will be a version of the *Petspeed Basic* compiler that is knocking the spots off the competition. A compiler scores over the more usual interpreter versions of Basic because the resulting program is more economical on memory space and should run faster: so bigger programs can get into the same limited memory area.

Petspeed and its 64 clone hail from Oxford Computer Systems.

Then there's the promise of the plug-in CP/M option, which in theory will enable the Vic to run a variety of good packages. In practice life won't be that simple — the CP/M packages will have to be loaded somehow, which might mean special disk formats and other complications. But in the long term the promise is there.

- **Attack** — how quickly a note reaches its peak amplitude
- **Decay** — how quickly it declines
- **Sustain** — how long the note lasts (up to 24 seconds thanks to the SID chip)
- **Release** — how long the note takes to fade into silence.

The programmable filters, corresponding to the slide controls you might see on a rock band's keyboard synthesiser, allow for more 'processing' of the sound (in increments of 0.059KHz, in fact, which is pretty fine).

As if that wasn't enough, you can also feed the frequency of the third oscillator back into either of the other two which produces some amazing effects.

Just imagine, you have produced a wonderful visual explosion in a game. No more does everything have to stop-dead while you wait out a delay loop to make your noise. You just poke in the envelope parameters of your explosion: and then when you need it a single poke will set it running while the program gets on with the job it was doing.

—Verdict—

A winner — lots of memory, many of the best features of the 64, great graphics and terrific sound capabilities, cheap peripherals available, an established Basic, and some good-looking ready-to-use programs coming up soon.

True, the extras seem more geared to games players than more 'serious' users — marvellous sound and those amazing sprites are a bit pointless if you want to design databases and run payroll programs

But even then it's a strong package, with a competitive price for a 64K 40-column computer.

The 64 looks particularly good for the enthusiast, however. By no means is the Commodore 64 a simple machine to use: indeed, it has a formidable complexity that should keep even the quickest of learners occupied for quite a while. I would not count this fact as a minus point as it will prevent users from outgrowing the machine in a relatively short space of time.

The price, which is going to be in the region of £299 + VAT, compares very favourably with other machines in the same bracket: most of them do not have the features that are offered on the 64.

In short, I like it. Doubtless be many others who feel as I do that Commodore have come up with a real winner this time.



Victrials

HOW THE VIC DISPLAY CONTROLS APPEAR
IN LISTINGS PRINTED ON THE 1515:

CLR	...	␣	(REVERSED HEART)
HOME	...	␣	(REVERSED S)
RVS ON	...	␣	(REVERSED R)
RVS OFF	...	■	(REVERSED UNDERSCORE)
CURSOR UP	...	␣	(REVERSED SHIFTED Q)
CURSOR DOWN...	...	␣	(REVERSED Q)
CURSOR LEFT...	...	␣	(REVERSED UPWARD BAR - SHIFTED H)
CURSOR RIGHT...	...	␣	(REVERSED LEFT SQUARE BRACKET)

SET COLOUR TO:

BLACK	...	■	(REVERSED SHIFTED P)
WHITE	...	␣	(REVERSED E)
RED	...	␣	(REVERSED £)
CYAN	...	␣	(REVERSED COMMODORE-SHIFTED *)
PURPLE	...	␣	(REVERSED COMMODORE-SHIFTED -)
GREEN	...	␣	(REVERSED UP ARROW)
BLUE	...	␣	(REVERSED LEFT ARROW)
YELLOW	...	␣	(REVERSED PI SIGN)

THE FUNCTION KEYS CAN BE INCORPORATED INTO PRINT STATEMENTS TOO.
AS WITH THE OTHER NON-ALPHANUMERIC KEYS, THEY APPEAR AS SPECIAL
SYMBOLS IN A LISTING:

F1	...	■	F2	TRACE
F3	...	■	F4	...
F5	...	■	F6	...
F7	...	■	F8	...

Bars + Boxes

by Njal Fisketjorn

This computerised variation on 'O'Grady says' doesn't look much but it drove us nuts. It comes from Njal Fisketjorn of Stavanger, Norway (who by the way was the illegibly anonymous author of a letter in the 'Dear Vic' column last issue); he converted this from an Apple program listed in a US magazine.

Basically you're presented with a coloured rectangle with two strips of colour below it. One of the bars is the same colour as the box. If the background is **black**, you press the shift key below that bar; if the background is **white**, you press the other. As you rack up the points the difficulty increases — the screen divides in two and later into four to further confuse you. Then it's the background colour of the part of the display with the box in it that matters.

Have fun!

```

100 PRINT "␣":GOSUB690
110 QQ$="XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
120 FORI=1TO7:READCO(I):NEXT
130 DATA28,30,31,156,158,159,28
140 HS=0
150 X$="␣"
160 X1$="␣"
170 X2$="␣"
180 X3$="␣"
190 TT$="00":SC=0:PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"
XXXXXXXXXXXXWHEN READY PRESS ␣ F7";
200 IFPEEK(197)=64THEN200
210 IFPEEK(197)=39THENPOKE36879,27:PRINT "
␣":POKE198,0:END
220 IFPEEK(197)⟨63THEN200
230 PRINT "␣":POKE36879,8
240 LS=0
250 PRINT "␣":TI$="000000"
260 HP=INT(RND(1)*2):X=5+HP*20
270 VP=INT(RND(1)*2):Y=1+VP*19
280 KP=HP*2+VP+1:LR=INT(RND(1)*2)
290 FORI=1TO4:BG(I)=144:Z=RND(1):IFZ>.5THE
N BG(I)=5:NEXT
300 LC=INT(RND(1)*5)+1
310 IFSC>26THEN400
320 IFSC<18THENY=9
330 IFSC<9THENX=15
340 IFSC>2THEN360
350 FORI=1TO4:BG(I)=144:NEXT:GOTO400
360 IFSC>11THEN380
370 FORI=2TO4:BG(I)=BG(1):NEXT:GOTO400
380 IFSC>20THEN400
390 BG(2)=BG(1):BG(4)=BG(3)
400 PRINT "␣";
410 FORI=1TO10:PRINTCHR$(BG(1))X$CHR$(BG(3))
)X$:NEXT
420 FORI=1TO10:PRINTCHR$(BG(2))X$CHR$(BG(4))
)X$:NEXT
430 PRINTCHR$(CO(LC))X1$CHR$(CO(LC+1))X1$
440 PRINTCHR$(CO(LC+LR))
450 QQ=INT(Y/2)+1:PRINT "␣";
460 PRINTLEFT$(QQ$,QQ);
470 IFY=20THEN490
480 PRINT
490 FORI=1TO8:PRINTTAB((X-5)/2)X2$:NEXT
500 PRINT "␣"LEFT$(QQ$,21);
510 PRINT "␣"LEFT$(QQ$,22)"="TAB(18)RIGHT$(TI$,2);
520 IFRIGHT$(TI$,4)>"0030"THEN600
530 GG=PEEK(653):IFGG<1THEN510
540 IFPEEK(145)=255THEN570
550 IF(BG(KP)=144ANDLR=0)OR(BG(KP)=5ANDLR=1)THEN600
560 GOTO580
570 IF(BG(KP)=144ANDLR=1)OR(BG(KP)=5ANDLR=0)THEN600
580 TT$=RIGHT$(TI$,2)
590 PRINT "␣"LEFT$(QQ$,22)"SORRY - WRONG BUTTON":GOTO610
600 PRINT "␣"LEFT$(QQ$,22)"="TAB(18)RIGHT$(TI$,2)"␣";
610 IFHS<SCTHENHS=SC
620 FORI=1TO2500:NEXT
630 POKE36879,24
640 PRINT "XXXXXXXXXXYOUR SCORE"SC:PRINT "XXXXXXXXXXHIGH SCORE"
650 IFSC<HSTHENPRINT "XXXXXXXXXXHIGH SCORE"HS
660 PRINT:IFTT$⟨"00"THENPRINT "XXXXXXXXXXTIME: "TT$
670 GOTO190
680 SC=SC+1:PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"SC:GOTO260
690 POKE36879,24
700 PRINT "XXXXXXXXXXBARS & BOXES␣"
710 PRINT "INSTRUCTIONS ? ";
720 IFPEEK(197)⟨11ANDPEEK(197)⟨28THEN720
730 IFPEEK(197)=28THENPRINT "NO":RETURN
740 PRINT:PRINT "␣"
750 PRINT "I WILL DRAW A COLOURED BOX AND TWO COLOURED BARS."
760 PRINT "NONE OF THE BARS WILL HAVE THE SAME COLOUR AS THE BOX."
770 PRINT "YOU MUST DETERMINE WHICH AND PRESS THE CORRESPONDING
␣SHIFT␣"
780 PRINT "IF THE BOX IS ON A WHITE BACKGROUND YOU MUST PRESS";
790 PRINT "THE OTHER ␣SHIFT␣"
800 FORI=1TO9000:NEXT
810 PRINT "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXPRESS ␣ F7 TO CONTINUE";
820 IFPEEK(197)⟨63THEN820
830 PRINT "XXXXXXXXXXBARS & BOXES␣"
840 PRINT "THE GAME LASTS FOR 30 SECONDS OR UNTIL YOU MAKE A MISTAKE"
850 PRINT "WHEN YOU WANT TO QUIT PRESS ␣ F1"
860 PRINT "XXXXXXXXXXGOOD LUCK!␣"
870 FORI=1TO2000:NEXT

```


780 POKE36878,15:POKE36876,220:RETURN
 790 POKE36878,10:FORL=1T04:FORM=254T0240+INT(RND(1)*10)
 STEP-1:POKE36876,M:NEXTM
 800 POKE36876,0:FORM=0T010:NEXTM,L:RETURN
 810 POKE36878,10:POKE36876,250-6*D:IFD=16THENPOKE36878,
 0:POKE36876,0
 820 RETURN
 830 PRINTX;PEEK(X):WAIT197,191,64:X=X+1:GOTO830



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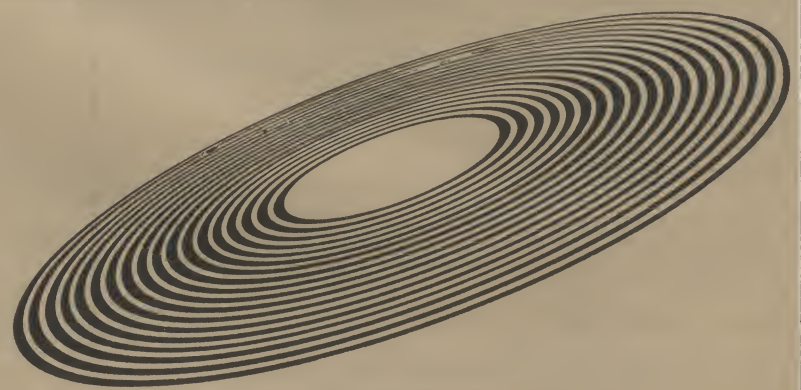
This game from 15-year-old Paul Martin of Grimsby involves a rocket working its way through the stars. As time progresses, more stars appear; if the rocket hits a star, it disappears into the 'white hole'. The game has been programmed to end when five crashes have occurred. At the end of the game, the time achieved is shown, as is the longest time so far.

Lines 5-130 set up the initial information screen. Lines 1000-1140 implode the screen and create the white hole when the rocket hits a star: lines 1470-1495 reduce the number of rockets available each time a crash occurs.

Lines 1500-1530 set up the final screen showing the time achieved.

Lines 2000-3000 set up the playing screen. Line 2030 gives one star per line in a random position. Lines 2035-2038 increase the number of stars per line (up to five stars) as time progresses.

This interesting game, which has obvious affinities with an old trooper called 'Asteroids', makes use of part of the 'Hypnotic' program listed in issue 2 of Vic Computing.



```

5 D$="000000"
6 G$="000000"
15 POKE36879,27
17 POKE36869,240
20 PRINT" "
50 PRINT"TIME:";D$ " HI:";G$:PRINT:PRINT
55 PRINT"███████"
60 PRINT"███████"
70 PRINT"███████ WHITE HOLE"
80 PRINT"███████"
85 PRINT"███████"
90 PRINT:PRINT:PRINT
100 PRINT" BY P.MARTIN":PRINT
110 PRINT:PRINT" HIT Z FOR LEFT":PRINT
120 PRINT" HIT M FOR RIGHT":PRINT
130 PRINT:PRINT" HIT SPACE TO START
140 GETD$
150 IFD$=" "THEN2000
160 GOTO140
1000 POKE36879,9
1005 POKE36874,0
1010 FORI=0TO22
1020 POKE36877,230+I
1030 POKE36864,12+I
1040 POKE36865,38+I
1050 POKE36866,150-I
1060 POKE36867,174-I#2
1070 NEXT
1080 I=0
1090 POKE36864,12+I
1100 POKE36865,38+I
1110 POKE36866,150-I
1120 POKE36867,174-I#2
1130 POKE36877,0
1140 POKE36879,8
1200 Y=Y-1
1470 IFY=48THEN1499
1498 RETURN
1499 S$=TI$
1500 PRINT"TIME=";S$
1503 POKE36879,42
1504 Z=0
1505 Z=0
1507 POKE36874,0
1520 IFS>G$THENG$=S$
1530 D$=S$
1540 X=7680
1550 POKE X,19:POKE X+1,3:POKE X+2,15:POKE X+3,18:POKE X+4,5:POKE X+5,58:POKE X+6,Y
1560 FORA=38400TO38406:POKEA,1:NEXT
1565 FORT=1TO190:NEXT
1570 FORA=38400TO38406:POKEA,5:NEXT
1575 FORT=1TO190:NEXT
1580 IFZ=20THEN1650
1590 Z=Z+1
1600 GOTO1560
1650 GOTO15
2000 PRINT" " :POKE36879,8:Y=53:TI$="000000"
2010 A=7900:B=11:D=8164:X=7680:TI$="000000"
2015 PRINT
2020 PRINT
2030 POKED+INT(32*VRND(1)),42
2031 POKE36878,3:POKE36874,150
2035 IFTI$>"000030"THENGOSUB3000
2036 IFTI$>"000100"THENGOSUB3000
2037 IFTI$>"000200"THENGOSUB3000
2038 IFTI$>"000300"THENGOSUB3000
2040 POKEA+B,32
2050 X=7680:POKE X,19:POKE X+1,3:POKE X+2,15:POKE X+3,18:POKE X+4,5:POKE X+5,58:POKE X+
6,Y
2051 PRINT
2055 X=7680:POKE X,19:POKE X+1,3:POKE X+2,15:POKE X+3,18:POKE X+4,5:POKE X+5,58:POKE X+
6,Y
2059 IFPEEK(A+B)=42THENGOSUB1000
2060 GETA$
2070 IFA$=" "THEN2100
2080 IFB>1AND A$="Z"THENB=B-1
2090 IFB<21AND A$="M"THENB=B+1
2100 POKEA+B,22
2105 POKEA+B+30720,5
2110 GOTO2030
3000 POKED+INT(32*VRND(1)),42:RETURN

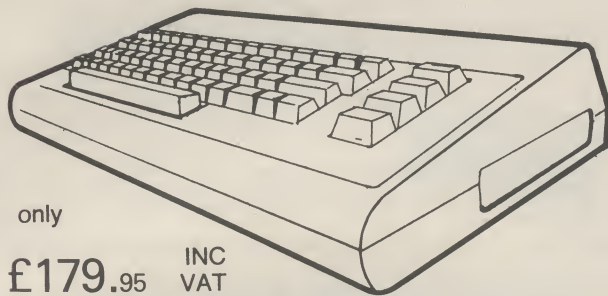
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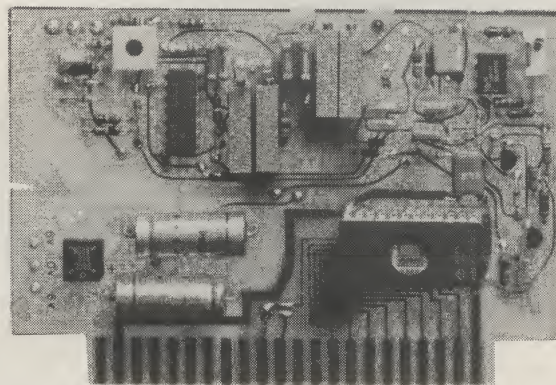
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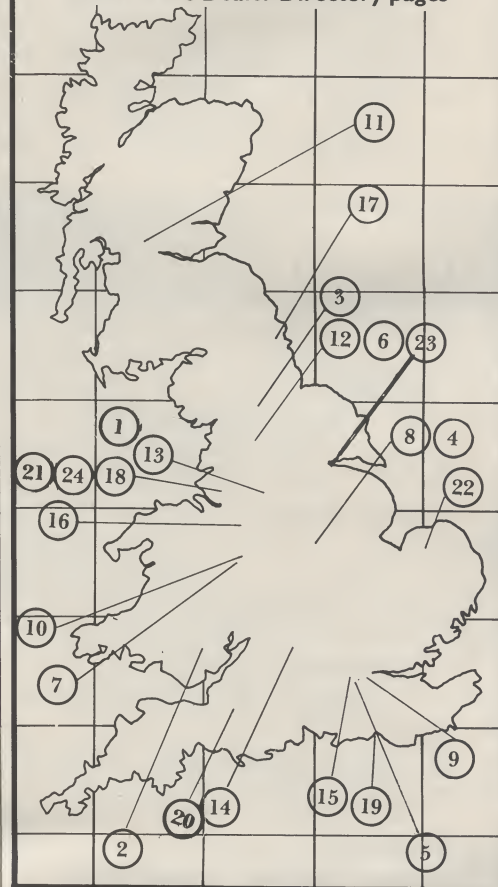


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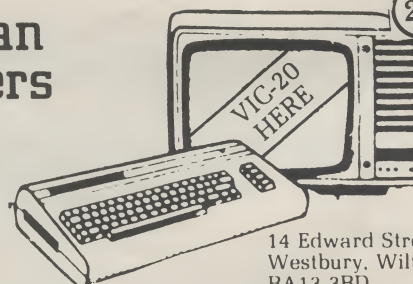
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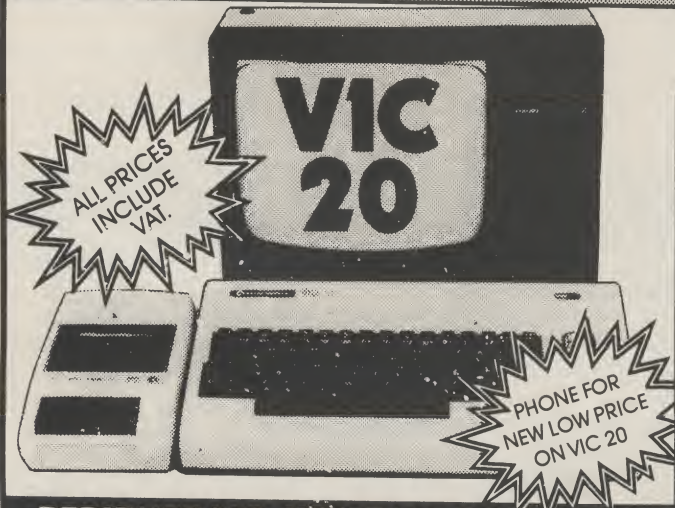
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Adda Computers 154 Victoria Road London W3

Adda is a major Vic dealer and stocks many of the Vic programs covered here. It also has some that are unique to it, and more are coming.

VicGraf: Excellent cartridge facilities for plotting, changing and generally investigating graphs. Price £28.95. [B] [E] [P]

VicStat: Another cartridge, this one for statistical calculations with a variety of output formats. Price £28.95. [E] [P]

Vic Forth: Try your hand at something other than Basic. Forth is a novel language, almost as fast as assembly code in operation but still with the ease of use of high-level languages. And you get to define your own programming commands as you go. The cartridge includes an extra 3K memory. Price £38.95. [P]

Anirog Computers 26 Balcombe Gardens Horley, Surrey

Mail order or counter sales at the Co-op in Crawley.

Lost in the Dark: Maze adventure with illuminating flashes of lighting as you defy nasties to reach the chalice. Price £6. [G]

Space Rescue: Get through space debris to rescue pals on devastated starbase. Price £6. [G]

Slalom: Ski the giant slalom. Price £6. [G]

Goblin's Gold: "High pressure" adventure. Price £6. [G]

Applied Systems Knowledge London House

42 Upper Richmond Road
London SW14 8DD

All ASK programs are educational in intention — and we think they set very high standards in that field. They're British, for a start, which isn't true of all the competition; they're well packaged with good instructions; and they are all "based on scripts written by leading educators and programmed by experts" (it says here). More in the pipeline, too.

Facemaker: Build a face on the screen — sharpens vocabulary, spelling and observation for ages 5-12. Needs 16K expansion. Price £8.95. [E]

Number Chaser: Good graphics and sound; quick mental arithmetic for age 5-12. Needs at least 8K expansion. Price £8.95. [E]

Number Gulper: Avoid gulpers, practice basic math to reach the target number. For ages 5-12. Needs at least 8K expansion. Price £8.95. [E]

We Want to Count: Simple intro to numbers for age 3 upwards. Needs 16K expansion. Price £8.95. [E]

Twister: Logical-thinking game — rearrange the geometric puzzle such that no row or column repeats a colour. Ages 8 upwards,

The compleat software catalogue — Part One

We circulated all the companies and individuals who claim to sell Vic programs — and several who don't! — to assemble the most complete survey of software for the Vic that you will find.

There's a lot, so we've had to split the Catalogue alphabetically by name of supplier. Part Two appears in the next issue along with Commodore's own software.

Prices include VAT and p&p except where noted. Most of the programs are available from Vic dealers or by mail order, and most are cassettes that run on the unexpanded Vic. You can assume

that's the case unless the text says it isn't. Some we have reviewed and/or bought, so in a few cases the descriptions also include a comment from us. We are however preparing a fuller review with star ratings of all the games and business packages we can get hold of.

Each entry here is coded by us into one or more categories, as follows:

- [G] games
- [B] business
- [E] education and school
- [H] home
- [P] programming tools

needs 16K expansion. Price £8.95.
Rainbow Towers: Move discs from three columns on to the other three. Ages 8 upwards, needs 16K expansion. Price £8.95. [G] [E]

Audiogenic PO Box 88 Reading, Berkshire

BOSS: New chess-playing program, claims to beat everything else on the Vic market. Price £14.99 [G]

Amok: Fast-action avoid-the-robots game. Price £6.99. [G]
Simple Simon: Test your dexterity by following the colours and tunes. Price £6.99. [G]

Vicalc: Turns the Vic into a programmable calculator: reviewed by us back in February as a handy little tool. Price £6.99. [E] [H]

A-ma-zing: Fast-moving gobbler game; needs 3K expansion. Price £6.99. [G]

Masterwits: A Mastermind-type 'guess the colours' game. Price £6.99. [G]

Kiddie Checkers: Simple draughts for children. Price £6.99. [G]

Wall Street: Trade in shares. Price £6.99. [G]

Alien Blitz: Multiple levels of difficulty in blasting the invaders. Price £6.99. [G]

Skymath: Pretty good US-oriented graphics-based introduction for small kids to basic addition and subtraction. Needs 3K expansion. Price £6.99. [E]

Space Division: A follow-on for division. Needs 3K expansion. Price £6.99. [E]

Invader Fall: Aliens come in at different points on the screen. Price £6.99. [G]

The Alien: Nothing to do with the movie; you're the alien, and you are in a maze full of nasties — trap them before they get you. A pretty good, fast game. Price £7.99. [G]

Star Wars: Space gunner fights

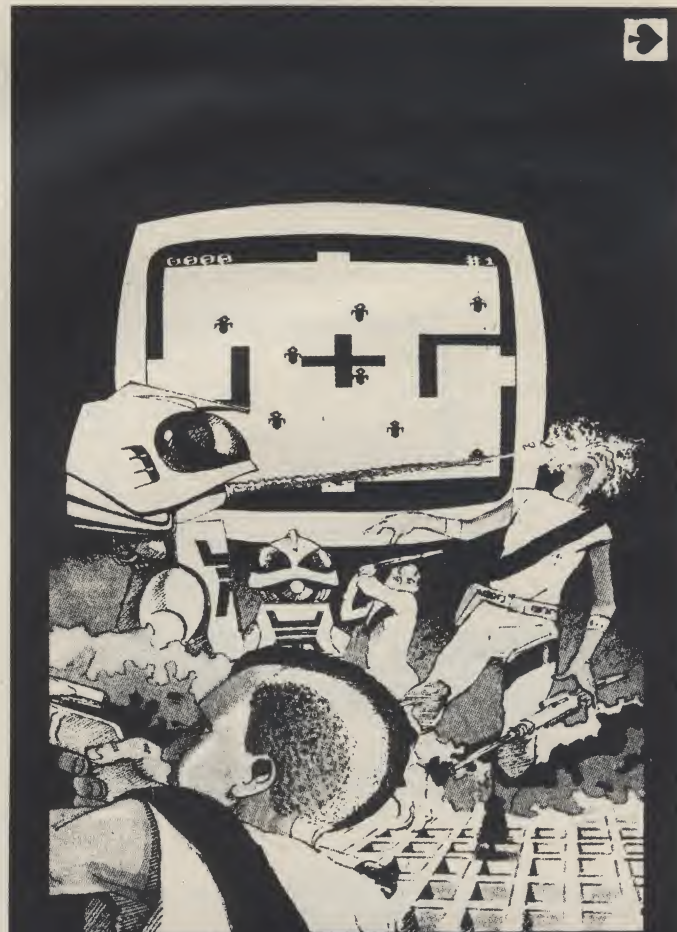
marauding interceptors. Price £6.99. [G]

Hangman and Hangmath: Find the word in Hangman, find the right answer in Hangmath to avoid that long drop. Price £7.99. [G] [E]

Math Hurdler and Monster Maze:

One teaches basic maths (if you get it wrong the hurdler trips), the other is a flee-the-monster maze game. Price £7.99. [G] [E]

Seawolf, Bounce Out and Vic



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Catalogue

Trap: All pretty simple games, but none the worse for that. Seawolf has your submarine sinking ships in a time limit: Bounce Out is 'Breakout' really: Vic Trap involves traversing the screen while trying to entice the Vic to cross your path. Price £8.99. [C]

Codemaker and Codebreaker: You have to guess the code in one, the Vic guesses in the other. Price £7.99. [C]

Cosmic Kamikaze: 'Invader Fall' game. Needs 3K or 8K expansion. Price £7.99. [C]

Golf: One or two players, with handicaps set by you and a choice of clubs with which to essay nine holes. Needs 3K expansion. Price £7.99. [C]

Spiders of Mars: One of the best of the simpler 'avoid hazards' Vic games; good graphics. You have to shoot your way across Mars avoiding the spiders and other unpleasantnesses. Cartridge only — £24.99. [C]

Cloudburst: Another good one; ten levels of difficulty to save earth from the acid rain and the mutant cloud-hoppers. Cartridge only — £24.99. [C]

Renaissance: High-quality version of the game othello, with eight levels of play and lots of extras. Cartridge only — £24.99. [C]

Satellites and Meteorites: An excellent version of 'Asteroids'. Cartridge only — £24.99. [C]

Meteor Run: Interesting variation on 'Asteroids', with you piloting your ship through the meteor belt. Cartridge only — £24.99. [C]

Vixel: A cassette-based magazine that we haven't seen yet. Issue one has four programs, some US-based Vic news, and programming tips: other issues are also available. Price £9.99. [C] [P]

BUTI: A 'programmers aid' that we're currently reviewing. All the usual stuff (like DELETE, FIND, HELP, AUTO, RENUMBER, STEP, TRACE) plus some less familiar tools — DUMP, UNNEW, hex/decimal converter, instant memory reconfiguration — and an additional 3K on board. Cartridge only — £29.99. [P]

Minikit: A cassette alternative: combination of programmers toolkit (adds FIND, DELETE, AUTO and TRACE for starters, plus single-key entry of several Basic commands) and memory configurator (relocator start-of-memory automatically depending on what expansion you have). £7.99. [P]

HESCOM: Machine-code software for Vic and Pet that lets them pass files or blocks or memory via user ports. Includes all the cabling you need. This and the following three products come from a highly regarded US supplier called Human Engineering Software. Price £24.99. [B] [P]

Assembler: Includes a 6502 assembler using standard mnemo-

tics and operand formats with a full-function screen editor. Price £14.99. [P]

HESPLOT: Hi-res graphics plotting subroutines (176x112 on an unexpanded Vic, 176x160 with 3K expansion). Price £14.99. [P]

HESCOUNT: Useful debugging facility that tells you how many times each line of your program was executed — very clever, highly recommended. Price £14.99. [P]

Wordcraft 20: Probably the most function-filled and definitely the most mature of the word processing packages on the Vic. It will be reviewed by us, but we're certainly enthusiastic advocates of the parent program — Wordcraft 20 is a pretty compatible version of Wordcraft 80, which runs on the 8000 series Pets. The cartridge includes an extra 8K memory. Cartridge only — £125. [B]

Vicat: Multi-purpose database program that requires 3K expansion. Price £8.99. [B] [P]

Avalon Hill Games 650 High Road London N12 0NL

Avalon Hill is a big US games company with neatly packaged products that we haven't actually tried. Its UK subsidiary assures us that this and the other packages listed, though written for Pets, will run on Vic — presumably without fully utilising the colour and sound, though. Memory requirements are also a bit unclear on the Vic, so check first. Add £1.20 per program for p&p on main orders except where stated.

Draw Poker: Provides you with four opponents. Price £10.95. [C]

Roadracer: One or two players. Price £10.95. [C]

Shootout: Zap the aliens. Price £12.95. [C]

Galaxy: Colonise it with one to 20 players. Price £7.27. [C]

Stocks and Bonds: Be a Wall Street genius. Price £7.27. [C]

Voyager: Explore a spaceship's corridors (in simulated 3D) avoiding the nasties. £12.95. [C]

Midway Campaign: Naval battles against the Japanese. Price £10.95. [C]

Bomber Attack: Pilot a plane, blast the target, beat the ack-ack. Price £10.95. [C]

Dneiper River Line: Fictional 1943 battle between the Russians and the Germans; you're the German commander (thought the Russians were on our side then?). Price £8.95. [C]

Tanktics: Tank battles on the Eastern front, and you're the Germans again. Price £15.95 — p&p on this one is £1.75. [C]

Baseball: You're a US baseball coach employing strategy against "a wily opponent". £11.95. [C]

Fort Defiance: Beat off the enemy cavalry, infantry, artillery) with your one cannon. Price £12.95. [C]

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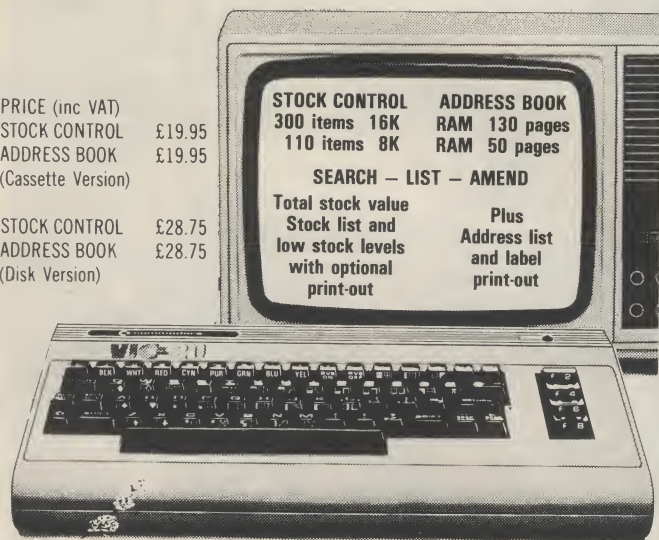
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Lords of Karma: Explore mythical terrain, uncover secrets, avoid monsters. Price £7.27. [C]

Nuclear Bomber: Avoid the Migs to zap the Commies. £10.95. [C]

Convoy Raiders: You're the Bismarck, the computer has the British side in 1941. £10.95. [C]

Planet Miners: It's 2050, one to four players are staking claims around the universe in competition with themselves and the computer. Price £10.95. [C]

Conflict 2000: One to ten players battle against the aliens. Price £10.95. [C]

Nukewar: Charming little number, a strategic confrontation game between two unnamed superpowers. Price £10.95. [C]

Tank Arcade: One or two players bop the tanks. Price £6.15. [C]

Acquire: Become wealthy in the hotel business — two to six players. Price £12.95. [C]

Andromeda Conquest: One to four players try to rule the universe. Well, why think small? Price £11.95. [C]

Telengard: Fantasy and role-playing adventure game with 50 levels of mazes to fight through. Price £14.95. [C]

Big Softie
5 Ashton Park
Finaghy

Belfast BT10 0JB
Explosion: Play against the computer to control the board by setting up chain reaction of nuclear explosions. Hmm. Mail order only. Price £4.50. [C]

King: Run the economics of your nation for 12 years, avoid the assassin. Mail order only. Price £4.50. [C]

Life: A version of the classic 'birth and death of cells' game — machine code, and capable of a fast 25 or so generations per second. Mail order only. Price £4.50. [C] [E]

Mastermind: Classic code-guessing game with various levels of difficulty. Mail order only. Price £4.50. [C]

Pontoon: Play the computer today, Monte Carlo tomorrow. Mail order only. Price £4.50. [C]

Reversie: Version of 'Othello'. Mail order only. Price £4.50. [C]

Star Trek: Fast version of Trekkies' delight. Needs 3K expansion. Mail order only. Price £4.50. [C]

3D Xeosy: 3D noughts and crosses. Mail order only. Price £4.50. [C]

Bridge Software
36 Fernwood
Marple Bridge
Stockport
Cheshire SK6 5BE

Vic Invaders: A neat version of the popular favourite — machine code, good colour and sound. Four rows of nine invaders each, five levels of difficulty. Mail order only. Price £6.90. [C]

Bug Byte
FREPOST
Liverpool L13 3AB

Vic Chess: Fine graphics, from our brief glance. 1,000 levels of play; options include setting the board up for specific problems. Castling and en passant provided. £7. [C]

Vic Asteroids: Version of the 'blast the meteors' game. Price £7. [C]

Another Vic in the Wall: Clever version of 'Breakout'. Price £7. [C]

Vic Panic: Climb ladders and dig holes to fox or trap the nasties. Price £7. [C]

Cosmiads: Version of the 'Glaxians' arcade game — shoot down the swooping aliens. Price £7. [C]

Vicgammon: Backgammon game which needs 3K expansion. Price £7. [C]

Cass Concerns
Maxet House
Liverpool Road
Luton

Bedfordshire LU1 1RS

***DAX*Database:** A good little name-and-address package with enter, delete, search, look and change. We've used it; it works, it's neat, and though it is inevitably a bit restricted (and a touch slow with a full database) it can be very useful. Price £5.95. [B] [H]

***DAX*PIMS:** A much more sophisticated package — PIMS is 'Personal Information Management System. Data is stored on a second cassette or disk; you define up to 20 searchable and labelled fields per record, do sorts, searches and calculations, and view or print sorted results and/or individual records. Price £15.50 on cassette, £20.99 for disk (which would frankly be preferable for the speed that this kind of database system really demands). [B]

The Computer Room
87 High Street
Tonbridge
Kent TR9 1RX

Quiz Tapes: A variety of different tests for use with Quiz Master (below). Current catalogue includes two general knowledge tests for adults, two more for kids, various arithmetic tests, French, and English words — with more to come. Price £1.85 each. [C] [E]

Quiz Setup: Design your own quiz tapes. Needs Quiz Master (below). Price £8. [C] [E]

Quiz Master: Control program for Quiz Tapes and Quiz Setup; scores for one or two players, lots of flexibility in allowing legitimate alternatives as responses, help with answers if you want it. Needs 3K expansion. Price £8. [C] [E]

Nim: Classic 'pick up sticks' game. Price £8. [C]

Finder: Alphabet game. £8. [E]

Post: Prints enlarged characters — handy for parcel labels, but some clever formatting also means it can be used for small posters,

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TRADER... An epic 48K graphic adventure that has to be seen to be believed. On your rounds of the Moons of Meridien, you meet some very bizarre customers indeed, will you live to tell the tale? A must for any VIC 20 owner who has a 16K Ram pack. £18.50 for tape or disk.

Send SAE for more details of these and other Pixel software.

PIXEL

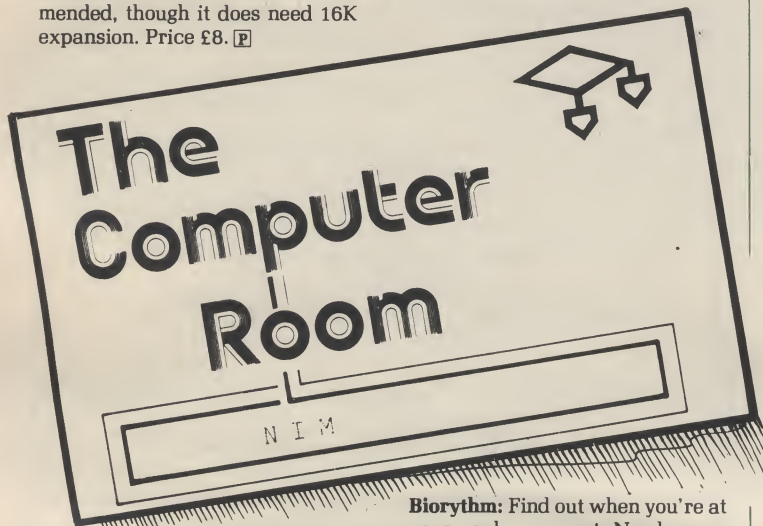
PIXEL PRODUCTIONS
39 Ripley Gardens London SW14 8HF

newsletter heads, etc. Needs 8K expansion (and a printer, of course). Price £14. [B] [H]

Sprint: A pretty basic word processor for a modest price. Needs 8K expansion. Price £8. [B] [H]

Label: Name-and-address file manager (add, delete, recall, amend) which can be set up to print on to sticky labels as well as ordinary paper. Useful with Sprint, too. Needs 8K expansion. Price £8. [B] [H]

Flow: Clever flowchart-drawing program that prohibits illogical moves. Store charts for subsequent amendment; print copies as required. Tested and recommended, though it does need 16K expansion. Price £8. [P]



Sprint: A pretty basic word processor for a modest price. Needs 8K expansion. Price £8. [B] [H]

Car Sales: Produces quotations on new and used car sales for motor traders (totals the whole sale including extras, caters for any discounts, includes VAT); also produces a financial statement of the sale for the trader, summarising deposit, balance, repayments and interest rate among other things. Looks neat. Needs 8K expansion and printer. Price £40.25. [B]

Supernews: Another good-looking application — provides with automated control of up to 600 newspaper rounds, including all the accounting involved, wholesalers' orders, holiday stops and starts, round substitutions, etc. Price on application. [B]

Galaset
30 Bayford Road
Littlehampton
West Sussex

All these originate from the States. Mail order only for now, though Galaset is fixing up for dealers to sell them.

Moon Lander: Classic judgement game — juggle speed, distance, fuel. Price £5.95. [C]

Wrap: Use keyboard or joystick to beat the barriers. Price £6.95. [C]

Bricks: Use keyboard or joystick in a version of 'breakout'. Price £4.95. [C]

Blackjack: Card-game classic for one or two players. Price £5.95. [C]

Tennis: Paddles standard. Price £5.95. [C]

Slots: One armed bandit game. Price £4.95. [C]

Bombs Away: Avoid ack-ack, zap the guns. Price £6.95. [C]

Alien Invaders: Keyboard or joystick control to beat the uninvited guests. Price £6.95. [C]

Capture: Use keyboard or joystick and five levels of difficulty to corral the escaped metal monsters. Price £5.95. [C]

Biorythm: Find out when you're at your peak — or not. Needs some expansion. Price £7.95. [H]

Spelling bees: A 'spelling bee' is a spelling test. There are five levels. Price £9.95 each. [E]

Starfighter: Use joystick to zap the enemy ships: seven levels of difficulty. Price £6.95. [C]

Hangman: Claims to be a superior graphics version of the game. Needs some expansion. Price £5.95. [C]

Reversal: Two-player version of 'Othello'. Price £4.95 for unexpanded Vics, much harder version of 8K expansion is £8.95. [C]

Typing drill: Learn to type. Price £5.95. [B] [E] [H]

Mathdrill: Basic maths for young kids. Price £6.95. [E]

Home Finance: Calculates payments, interest rates, investments, remaining balances, etc. Price £7.95. [H]

Household Inventory: List everything for insurance purposes — up to 100 items. Needs some expansion. Price £9.95. [H]

Auto Expense Manager: Figure out what your car's costing you. Needs some expansion. Price £9.95. [B] [H]

Stock portfolio manager: Track your investments (if any). Needs some expansion. Price £14.95. [H]

Data Manager: A data base program storing about 100 records for each 8K expansion you have: add, amend, delete, search, sort, print. Price £5.95. [B] [H]

Invasion: Use keyboard or joystick to beat the enemy with bombs and rocket. Price £6.99. [C]

Raceway: Racetrack game for one or two players. Price £6.99. [C]

Krazy Kong: Rescue maidens from much-maligned ape who is chucking barrels down the stairs at you. Price £6.99. [H]

Dodgecars: Back on the M4 with keyboard or joystick. Price £6.99. [C]

Tank: Two-player battle. Price £6.99. [C]

Six-gunner: Target game. Price £6.99. [C]

Alien Panic: Climb ladders, dig traps, avoid nasties. Keyboard or joystick control. Price £6.99. [C]

Collide: Fast game which has you running over dots while avoiding the "computer controlled happy face" (whatever that is). Price £5.95. [C]

Search: Drive around collecting money and remembering to refuel occasionally while evading The Blob. Keyboard or joystick. Price £6.99. [C]

Motocross: Motorbike scramble with rocks and jumps; two levels, keyboard or joystick control. Price £6.99. [C]

Vikman: Another friend-of-Pacman game. Keyboard or joystick. Price £6.99. [C]

Quirk: Jump up through holes in the moving floor, catch falling objects: quick reactions vital. Keyboard or joystick. £6.99. [C]

Bomber: Use keyboard or joystick to control three aircraft clearing the enemy from a canyon. Price £6.99. [C]

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Journey: Dodge the rocks and pick up fuel in the cavern using keyboard or joystick. Price £6.99. [C]

Blowup: Collect booty, avoid bombs and barriers; and the game gets harder as you go. £6.99. [C]

Gemini Marketing
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Sorry, we know little about any of these — Gemini didn't respond to

our request for information, so this information comes from our files. Mail order only.

Database: Multi-purpose alternative to card indexing. Price £19.95. [B] [H]

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Commercial accounts: Sales and purchase ledgers with bank account and daily journal. If it can do all that on a cassette system, it's probably worth looking at. Price £19.95. [B]

Home Accounts: Complete control for domestic finances. Price £19.95. [H]

Chopin Etudes: Six of the eponymous pieces played by Vic. Price £19.95. [H]

Motor Accountant: Find out what your car is costing you. Price £19.95. [B] [H]

Recipe File: For "computer widows" (yuk!) to input recipes and suggest meal alternatives. Price £19.95. [H]

Dr P Holmes
21 Colin Drive
London NW9 6ES

Complete Assembler Course: Comprises a 200-page paperback containing a complete self-paced instruction course on the 6502 instruction set (book available separately at £10) and a cassette or disk with four programs — assembler for unexpanded Vic and for 3K expansion, a BIN/BCD/Hex tutor (shows the interrelationship between the binary, decimal and hex number bases, and also demonstrates operation of the 6502 carry flag), and a set of BIN/BCD/Hex exercises. Price for book and software is £15 on cassette, £17 for a disk. [P]

Peter V Hunt
62 Copythorne Road
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Hangman: The old favourite. Three programs on the tape each with 50 words. Mail order only. Price £4. [C]

Beetle Drive: Another standard — roll a dice to create the shape. Mail order only. Price £4. [C]

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After just receiving the August **Vic Computing**, I was most distressed to see that there were no programs for the standard Vic-20. Instead there were three programs which each required the Super Expander cartridge, which is all right for those who have one: but I am sure that the majority is like me and hasn't. So in future think of the majority and let us see more programs for the standard Vic-20.

For people wishing to use better graphics in the Rhino program here are a few small changes: in line 2010, 7040 and 8800 change all the 160s to 88s.

John Ridal, Sheffield

We thought we'd try finding out how many of you had the graphics expansion; well, it looks as though we misjudged the mood of the readership. Sorry.

I have had my Vic-20 now since early October 1981 and have delved deeply into all aspects of Basic. I now have come to a point where I cannot proceed, stopped by one factor; SPEED and the lack of it!

Machine code is called for. "Ha ha", I hear you thinking, "Buy the Commodore Monitor." Two drawbacks there: one, I wish to sell my MC programs, and how many people will buy the cartridge for one program? Two, I will soon be buying the Vic-30(soon??) and that takes only Ultimax cartridges.

The point of this letter is this: maybe, perhaps once every issue, you could give us a machine code section, telling us Basic users how to speed up!

Philip Richardson, Linfield, Sussex

TINYMON is a start, isn't it? We're also having the machine code packages reviewed. An introduction to machine code has been commissioned, too, and if there's enough interest we will indeed consider running a machine code corner. More feedback on this, please: is it something the rest of you want?

In order to learn about computers and programming, and after



looking at what was available in the area, I purchased my Vic-20 at the beginning of May this year. Now less than three months later we have Commodore previewing big improvements in its range, the Sinclair Spectrum with 32-column display and 16K RAM for £125, the Dragon 32 with 32-column display and 32K RAM for £199.50 and the Newbrain 'A' with its 40- or 80-column display and 32K RAM for £233.

Expansion for the Vic isn't cheap, either. Why does a 16K RAM cost £74.95 when a similar thing for the ZX costs £29.95 or less?

I cannot help but think that I am yet another punter who has been ripped off by American Big Business. Later this year, it is my intention to persuade my employer to invest something in the order of £2,000 in a small business computer. The way I feel at the moment, it is unlikely to be a Commodore.

To be fair, the Vic-20 has in fact lived up to my expectations. It appears to be a well-made product which is thoroughly reliable. Its cassette load/save/verify is faultless: its Basic is a joy to use. I am grateful for that.

Finally, may I compliment you on your fine magazine with its fund of informative articles. Highly readable and superb quality paper too!

F. Tarttelin, Scunthorpe

We weren't sure whether the last paragraph of this letter exhibited a (highly commendable) love of irony. Still, it seems to us that anyone for whom the Vic has "lived up to expectations" is on dodgy ground for a complaint about being ripped off.

See the 'Eye on Commodore' in this issue for our views. We have no brief to apologise for Commodore's pricing, and frankly we

tend to agree that the Vic and its add-ons are a bit on the expensive side. But we regard the Vic on balance as being worth the extra because of its fine keyboard and because of the wealth of software and hardware that's available for it.

As for the business computer for £2,000, we were hard put to think of any decent disk-based computer that you can buy for that price with a printer and some business software — apart from a discounted Apple or a Pet... or perhaps, just perhaps, a Vic.

Not having access to a Pet I experimented to find this way of inputting the TINYMON program into my Vic. You will need an expanded Vic and have to type the values in as DATA statements. Then add a basic loader (I used the one in Nick Hampshire's Vic Revealed) and append the following lines:

```
8000 OPEN 1,1,1, "PROGNAME"
9092 R$ = "POKE":S$ = ","
9094 P$ = R$ + STR$(L) + S$ +
      STR$(N)
```

Amend lines:

```
9100 PRINT £1,P$
9140 CLOSE 1:END
```

The first data value will depend on how much memory you have — make it the start of Basic.

RUN the program and it saves a long file (it takes a few minutes). When finished rewind the tape and clear the memory, then type directly

```
POKE 43,1
POKE 44,4
POKE 45,20
POKE 46,8
POKE 47,24
POKE 48,8
POKE 49,24
POKE 50,8
```

After this use the 'merge' procedure to POKE 191,1: OPEN 1. When the Vic has found the file clear the screen, type three cursor downs, the then type:

```
PRINT "home": POKE 198,1 :
      POKE 613,13: POKE 153,1
```

When 'return' is pressed the Vic will be poking the values directly into their proper locations.

When finished type SAVE or RUN — the program will be in memory.
G D Cossins, Leeds

I have had a Vic-20 for several months now, and wish to try my hand at machine code programming. After seeing the TINYMON

1 program in your April issue, I wonder if any of your readers might have a Pet suitable to load this TINYMON 1. If anyone can oblige, I live in the Bristol area and can be contacted after 6.30 pm on (0272) 852598.

Paul Knight, Bristol BS19 2AE

Can anyone oblige me by selling me a copy of TINYMON 1 as I do not have access to a Pet but would like to use this Machine Code monitor.

D Tyeson, 3 Tower Gardens, Westhill, Inverness

Rally round, folks. By the by, we've had a number of Victuals submissions that give you Jim Butterfield's TINYMON monitor via DATA statements on a Vic. We're deciding which is the best, and we'll publish it soon.

Please could you tell me if the Vic Printer is the only one which can be used with the Vic-20; if not please send a list of printers which will work — and any extras needed to make them work — with the Vic-20.

Stephen Hall, Tamworth

Well, we're not in the business of sending out lists. But apart from the plug-in-and-go Vic printer there are two sorts of printer interface now becoming available. The cheapest option is to buy a converter and plug in a Sinclair ZX printer: see references in the new section. The fancier alternative is to get an RS232 interface cartridge: this will allow you to plug in a variety of RS232-compatible printers. Commodore's RS232 interface is £30.39, Stack has one at £22.99: both need a little bit of added programming before they'll work.

In your April issue a Mr Hutter of Milton Keynes sent in a letter saying that you can run programs by shifting the RUN/STOP key, but it has to load first. I also discovered this, but I've discovered a way of getting around the loading problem if your program is already in the memory. You must first type in a character (this can be any character) and then you can SHIFT the RUN/STOP key. The computer will show on the screen:

```
XLOAD
?SYNTAX ERROR
READY
RUN
```

The program will then run as normal.

Richard Johnson, Reading

VIC



VIC

24

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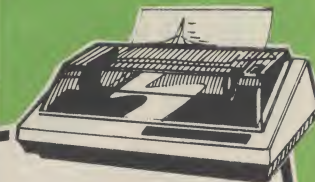
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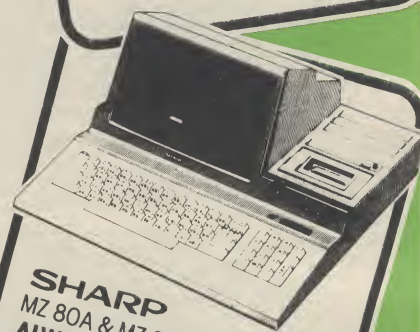
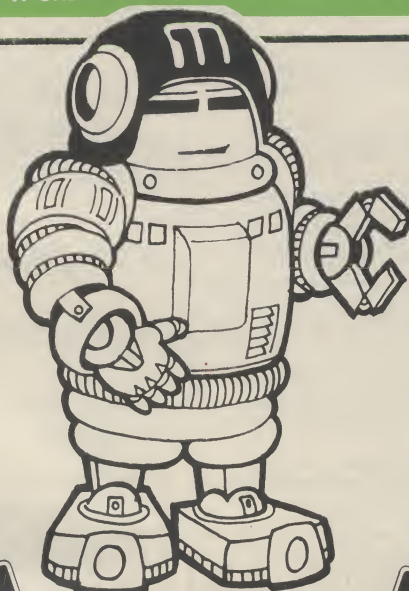
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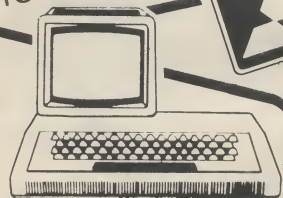
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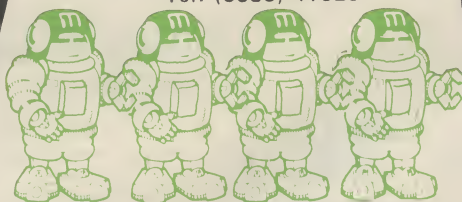
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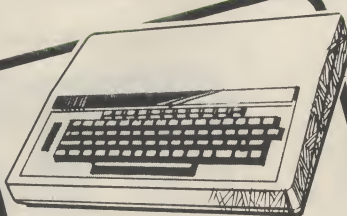
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VIC-20

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